



Ladner7L.ST25.txt  
SEQUENCE LISTING

LADNER, Charles C.  
GUTERMAN, Sonia K.  
ROBERTS, Bruce L.  
MARKLAND, William  
LEY, Arthur C.  
KENT, Rachel B.

<120> DIRECTED EVOLUTION OF NOVEL BINDING PROTEINS

<130> LADNER=7L

<140> 09/896,005

<141> 2001-06-19

<150> 08/415,911

<151> 1995-03-04

<150> 08/009,319

<151> 1993-01-16

<150> 07/664,969

<151> 1991-03-01

<150> 08/993,776

<151> 1997-12-15

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<170> Patentin version 3.2

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+220+  
 +223+ synthetic - portion of M13 gene VIII protein

+400+ 9

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04000 11

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02100 12

02110 4

02120 PFT

02130 Artificial

02200

02230 synthetic - 39-42 segment of human ITI-D1

04000 12

Met Gly Asn Gly

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02100 13

02110 4

02120 PFT

02130 Artificial

02200

02230 synthetic - 96-99 segment of trypsin

04000 13

Ser Asn Thr Leu

1

02100 14

02110 4

02120 PFT

02130 Artificial

02200

02230 synthetic - interdomain linker

04000 14

Gly Gly Gly Ser

1

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02200

02230 synthetic - interdomain linker

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Glu Gly Gly Gly Thr

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5

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1014  
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1016 16

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1017 17  
 1018 11  
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1021  
 1022 synthetic, EG3GS linker at NarI site of gene of Table 113

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1024 18  
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Xaa	Xaa	Xaa	Cys	Cys	Xaa
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Cys Xaa Xaa Xaa Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Cys Cys  
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Xaa Xaa Cys Xaa Xaa Xaa Xaa Cys  
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Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Cys  
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 1 5 10 15

Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Cys  
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\*010\* 37  
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Cys Xaa Xaa Xaa Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Cys Cys
1          5          10          15

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Cys
      20          25

<210> 38
<211> 26
<212> PPT
<213> Artificial

<200>
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<200>
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<200>
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<203> Xaa can be any naturally occurring amino acid

<200>
<201> misc_feature
<202> (20)..(25)
<203> Xaa can be any naturally occurring amino acid

<400> 38

Cys Xaa Xaa Xaa Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Cys Cys
1          5          10          15

Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Cys
      20          25

<210> 39
<211> 27
<212> PPT
<213> Artificial

<200>
<203> synthetic, omega conotoxin consensus

<200>

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<101> misc_feature
<102> (2)..(7)
<103> Xaa can be any naturally occurring amino acid

<200>
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<203> Xaa can be any naturally occurring amino acid

<300>
<301> misc_feature
<302> (17)..(19)
<303> Xaa can be any naturally occurring amino acid

<400>
<401> misc_feature
<402> (21)..(26)
<403> Xaa can be any naturally occurring amino acid

<400> 34
Cys Xaa Xaa Xaa Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Cys Cys
1          4          10          15

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Cys
20          25

<100> 40
<101> 14
<102> PPT
<103> Artificial

<200>
<201> synthetic, metal finger protein library

<300>
<301> misc_feature
<302> (5)..(10)
<303> Xaa can be any naturally occurring amino acid

<400> 40
His Asn Gly Met Xaa Xaa Xaa Xaa Xaa Xaa His Asn Gly Cys
1          5          10

<100> 41
<101> 14
<102> PPT
<103> Artificial

<200>
<201> synthetic, metal finger protein library

<300>
<301> misc_feature
<302> (5)..(10)
<303> Xaa can be any naturally occurring amino acid

<400> 41

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Cys Asn Gly Met Xaa Xaa Xaa Xaa Xaa Xaa His Asn Gly His  
1 5 10

<210> 42  
<211> 15  
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<220>  
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<230>  
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<232> (4)..(4)  
<233> Xaa can be any naturally occurring amino acid

<230>  
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<232> (6)..(11)  
<233> Xaa can be any naturally occurring amino acid

<400> 43

His Gly Pro Xaa Met Xaa Xaa Xaa Xaa Xaa Xaa His Asn Gly Cys  
1 5 10 15

<210> 43  
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<212> PRT  
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<220>  
<223> synthetic, metal finger protein library based on 440-461 of  
HARD90, Fig. 1

<400> 43

Ser Asp Glu Ala Ser Gly Cys His Tyr Gly Val Leu Thr  
1 5 10

<210> 44  
<211> 58  
<212> PRT  
<213> bovine- Bos taurus

<400> 44

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Lys Ala  
1 5 10 15

Arg Ile Ile Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
20 25 30

Phe Val Tyr Gly Gly Cys Arg Ala Lys Arg Asn Asn Phe Lys Ser Ala  
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
50 55

\*210\* 45  
\*211\* 58  
\*212\* PET  
\*213\* Artificial

\*220\*  
\*223\* synthetic - EpiNE alpha (13-21)

\*400\* 45

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala  
1 5 10 15

Met Phe Gln Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
20 25 30

Phe Val Tyr Gly Gly Cys Met Gly Asn Gly Asn Asn Phe Lys Ser Ala  
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
50 55

\*210\* 46  
\*211\* 58  
\*212\* PET  
\*213\* Artificial

\*220\*  
\*223\* synthetic - EpiNE3 (13-21)

\*400\* 46

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Gly  
1 5 10 15

Phe Phe Ser Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
20 25 30

Phe Val Tyr Gly Gly Cys Met Gly Asn Gly Asn Asn Phe Lys Ser Ala  
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
50 55

\*210\* 47  
\*211\* 58  
\*212\* PET  
\*213\* Artificial

\*220\*  
\*223\* synthetic - EpiNE6 (13-21)

(400) 47

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Gly  
1 5 10 15

Phe Phe Gln Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
20 25 30

Phe Val Tyr Gly Gly Cys Met Gly Asn Gly Asn Asn Phe Lys Ser Ala  
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
50 55

(410) 48

(411) 58

(412) PFT

(413) Artificial

(420)

(423) Synthetic - EpiNE7 (13-21)

(400) 48

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala  
1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
20 25 30

Phe Val Tyr Gly Gly Cys Met Gly Asn Gly Asn Asn Phe Lys Ser Ala  
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
50 55

(410) 49

(411) 58

(412) PFT

(413) Artificial

(420)

(423) Synthetic - EpiNE4 (13-21)

(400) 49

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala  
1 5 10 15

Ile Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
20 25 30

Phe Val Tyr Gly Gly Cys Met Gly Asn Gly Asn Asn Phe Lys Ser Ala  
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
50 55

02100 50  
02110 58  
02120 PPT  
02130 Artificial

02200  
02220 synthetic - EpiNE8 (13-21)

04000 50

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala  
1 5 10 15

Ile Phe Lys Arg Leu Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
20 25 30

Phe Val Tyr Gly Gly Cys Met Gly Asn Gly Asn Asn Phe Lys Ser Ala  
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
50 55

02100 51  
02110 58  
02120 PPT  
02130 Artificial

02200  
02220 synthetic - EpiNE1 (13-21)

04000 51

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Ile Ala  
1 5 10 15

Phe Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
20 25 30

Phe Val Tyr Gly Gly Cys Met Gly Asn Gly Asn Asn Phe Lys Ser Ala  
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
50 55

02100 50  
02110 50  
02120 PPT  
02130 Artificial

02200

<223> synthetic - EpiNE5 (13-31)

<400> 51

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Ile Ala  
1 5 10 15

Phe Phe Gln Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
20 25 30

Phe Val Tyr Gly Gly Cys Met Gly Asn Gly Asn Asn Phe Lys Ser Ala  
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
50 55

<210> 51

<211> 51

<212> PEST

<213> Artificial

<220>

<400> synthetic - EpiNE1 (13-31)

<400> 51

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Ile Ala  
1 5 10 15

Asn Phe Lys Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
20 25 30

Phe Val Tyr Gly Gly Cys Met Gly Asn Gly Asn Asn Phe Lys Ser Ala  
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
50 55

<210> 54

<211> 54

<212> PEST

<213> Artificial

<220>

<400> synthetic - EpiC 1 and EpiC 11 (15-19)

<400> 54

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Met Gly  
1 5 10 15

Phe Ser Lys Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
20 25 30

Phe Val Tyr Gly Gly Cys Arg Ala Lys Arg Asn Asn Phe Lys Ser Ala  
           35                          40                          45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
       50                          55

42100 55  
 42110 58  
 42120 PPT  
 42130 Artificial

42200  
 42230 synthetic - EpiC7 (15-19)

44000 55

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Met Ala  
   1                  5                          10                          15

Leu Phe Lys Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
           20                          25                          30

Phe Val Tyr Gly Gly Cys Arg Ala Lys Arg Asn Asn Phe Lys Ser Ala  
           35                          40                          45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
       50                          55

42100 58  
 42110 58  
 42120 PPT  
 42130 Artificial

42200  
 42230 synthetic - Epi C8 (15-19)

44000 58

Arg Pro Asp Phe Cys Leu Glu Pro Pro Asn Thr Gly Pro Cys Phe Ala  
   1                  5                          10                          15

Ile Thr Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
           20                          25                          30

Phe Val Tyr Gly Gly Cys Arg Ala Lys Arg Asn Asn Phe Lys Ser Ala  
           35                          40                          45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
       50                          55

42100 57  
 42110 58  
 42120 PPT  
 42130 Artificial

02200

02230 synthetic - EpiC10 (15-19)

04000 57

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Met Ala  
1 5 10 15

Leu Phe Gln Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
20 25 30

Phe Val Tyr Gly Gly Cys Arg Ala Lys Arg Asn Asn Phe Lys Ser Ala  
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
50 55

02100 58

02110 58

02120 PFT

02130 Artificial

02200

02230 synthetic - EpiC20 (15-19)

04000 58

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Met Ala  
1 5 10 15

Leu Ser Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
20 25 30

Phe Val Tyr Gly Gly Cys Arg Ala Lys Arg Asn Asn Phe Lys Ser Ala  
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
50 55

02100 59

02110 58

02120 PFT

02130 Artificial

02200

02230 synthetic, EPiNE7.6

04000 59

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala  
1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
20 25 30

Phe Leu Tyr Gly Gly Cys Lys Gly Lys Gly Asn Asn Phe Lys Ser Ala  
 35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
 50 55

<210> 60  
 <211> 58  
 <212> PFT  
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<220>  
 <223> synthetic, EPiNE7.8, 7.9, 7.31

<400> 60

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala  
 1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
 20 25 30

Phe Glu Tyr Gly Gly Cys Trp Ala Lys Gly Asn Asn Phe Lys Ser Ala  
 35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
 50 55

<210> 61  
 <211> 58  
 <212> PFT  
 <213> Artificial

<220>  
 <223> synthetic, EPiNE7.11

<400> 61

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala  
 1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
 20 25 30

Phe Gly Tyr Ala Gly Cys Arg Ala Lys Gly Asn Asn Phe Lys Ser Ala  
 35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
 50 55

<210> 62  
 <211> 58

0210> PFT  
0213> Artificial

0220>  
0223> synthetic, EPiNE7.7

0400> 62

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala  
1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
20 25 30

Phe Glu Tyr Gly Gly Cys His Ala Glu Gly Asn Asn Phe Lys Ser Ala  
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
50 55

0210> 63  
0211> 53  
0212> PFT  
0213> Artificial

0220>  
0223> synthetic, EPiNE7.4, 7.14

0400> 62

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala  
1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
20 25 30

Phe Leu Tyr Gly Gly Cys Trp Ala Gln Gly Asn Asn Phe Lys Ser Ala  
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
50 55

0210> 64  
0211> 53  
0212> PFT  
0213> Artificial

0220>  
0223> synthetic, EPiNE7.5

0400> 64

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala  
1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
 20 25 30

Phe Arg Tyr Gly Gly Cys Leu Ala Glu Gly Asn Asn Phe Lys Ser Ala  
 35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
 50 55

00100 66  
 00110 58  
 00120 PBT  
 00130 Artificial

00200  
 00230 synthetic, EPiNE7.10, 7.20

04000 66

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala  
 1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
 20 25 30

Phe Asp Tyr Gly Gly Cys His Ala Asp Gly Asn Asn Phe Lys Ser Ala  
 35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
 50 55

00100 66  
 00110 58  
 00120 PBT  
 00130 Artificial

00200  
 00230 synthetic, EPiNE7.1

04000 66

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala  
 1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
 20 25 30

Phe Lys Tyr Gly Gly Cys Leu Ala His Gly Asn Asn Phe Lys Ser Ala  
 35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
 50 55

<Q10> 67  
 <Q11> 58  
 <Q12> PRT  
 <Q13> Artificial

<Q100>  
 <Q130> synthetic, EPiNE7.16

<Q100> 67

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala  
 1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
 20 25 30

Phe Thr Tyr Gly Gly Cys Trp Ala Asn Gly Asn Asn Phe Lys Ser Ala  
 35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
 50 55

<Q100> 68  
 <Q110> 58  
 <Q120> PRT  
 <Q130> Artificial

<Q100>  
 <Q130> synthetic, EPiNE7.19

<Q100> 68

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala  
 1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
 20 25 30

Phe Asn Tyr Gly Gly Cys Glu Gly Lys Gly Asn Asn Phe Lys Ser Ala  
 35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
 50 55

<Q100> 69  
 <Q110> 58  
 <Q120> PRT  
 <Q130> Artificial

<Q100>  
 <Q130> synthetic, EPiNE7.12

<Q100> 69

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala  
 1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
 20 35 30

Phe Gln Tyr Gly Gly Cys Glu Gly Tyr Gly Asn Asn Phe Lys Ser Ala  
 35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
 50 55

02100 70  
 02110 58  
 02120 PRT  
 02130 Artificial

02200  
 02230 synthetic, EPiNE7.17

04000 70

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala  
 1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
 20 35 30

Phe Gln Tyr Gly Gly Cys Leu Gly Glu Gly Asn Asn Phe Lys Ser Ala  
 35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
 50 55

02100 71  
 02110 58  
 02120 PRT  
 02130 Artificial

02200  
 02230 synthetic, EPiNE7.21

04000 71

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala  
 1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
 20 35 30

Phe His Tyr Gly Gly Cys Trp Gly Gln Gly Asn Asn Phe Lys Ser Ala  
 35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
 50 55

<210> 72  
 <211> 58  
 <212> PPT  
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<220>  
 <221> synthetic, EPiNE7.22

<400> 72

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala  
 1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
 20 25 30

Phe His Tyr Gly Gly Cys Trp Gly Glu Gly Asn Asn Phe Lys Ser Ala  
 35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
 50 55

<210> 73  
 <211> 59  
 <212> PPT  
 <213> Artificial

<220>  
 <221> synthetic, EPiNE7.23

<400> 73

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala  
 1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
 20 25 30

Phe Lys Tyr Gly Gly Cys Trp Gly Lys Gly Asn Asn Phe Lys Ser Ala  
 35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
 50 55

<210> 74  
 <211> 59  
 <212> PPT  
 <213> Artificial

<220>  
 <221> synthetic, EPiNE7.24

<400> 74

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Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala  
 1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
 20 25 30

Phe Lys Tyr Gly Gly Cys His Gly Asn Gly Asn Asn Phe Lys Ser Ala  
 35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
 50 55

<0100> 71  
 <0110> 58  
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<0200>  
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<0400> 71

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala  
 1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
 20 25 30

Phe Pro Tyr Gly Gly Cys Trp Ala Lys Gly Asn Asn Phe Lys Leu Ala  
 35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
 50 55

<0100> 76  
 <0110> 58  
 <0120> PRT  
 <0130> Artificial

<0200>  
 <0230> synthetic, EPiNE7.16

<0400> 76

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala  
 1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
 20 25 30

Phe Lys Tyr Gly Gly Cys Trp Gly His Gly Asn Asn Phe Lys Ser Ala  
 35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
 50 55

<210> 77  
 <211> 58  
 <212> PRT  
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<220>  
 <223> synthetic, EPiNE7.27

<400> 77

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala  
 1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
 20 25 30

Phe Asn Tyr Gly Gly Cys Trp Gly Lys Gly Asn Asn Phe Lys Ser Ala  
 35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
 50 55

<210> 78  
 <211> 58  
 <212> PRT  
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<220>  
 <223> synthetic, EPiNE7.28

<400> 78

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala  
 1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
 20 25 30

Phe Thr Tyr Gly Gly Cys Leu Gly His Gly Asn Asn Phe Lys Ser Ala  
 35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
 50 55

<210> 79  
 <211> 58  
 <212> PRT  
 <213> Artificial

<220>  
 <223> synthetic, EPiNE7.29

<400> 79

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala  
1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
20 25 30

Phe Thr Tyr Gly Gly Cys Leu Gly Tyr Gly Asn Asn Phe Lys Ser Ala  
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
50 55

<210> 80

<211> 58

<212> PPT

<213> Artificial

<220>

<223> synthetic, EPiNE7.20, 7.34, 7.35

<400> 80

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala  
1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
20 25 30

Phe Lys Tyr Gly Gly Cys Trp Ala Glu Gly Asn Asn Phe Lys Ser Ala  
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
50 55

<210> 81

<211> 58

<212> PPT

<213> Artificial

<220>

<223> synthetic, EPiNE7.32

<400> 81

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala  
1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
20 25 30

Phe Gly Tyr Gly Gly Cys Trp Gly Glu Gly Asn Asn Phe Lys Ser Ala  
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
50 55

+210+ 81  
+211+ 52  
+212+ PRT  
+213+ Artificial

+220+  
+223+ synthetic, EPiNE7.33

+400+ 82

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala  
1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
20 25 30

Phe Glu Tyr Gly Gly Cys Trp Ala Asn Gly Asn Asn Phe Lys Ser Ala  
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
50 55

+210+ 83  
+211+ 53  
+212+ PRT  
+213+ Artificial

+220+  
+223+ synthetic, EPiNE7.36

+400+ 83

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala  
1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
20 25 30

Phe Val Tyr Gly Gly Cys His Gly Asp Gly Asn Asn Phe Lys Ser Ala  
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
50 55

+210+ 84  
+211+ 54  
+212+ PRT  
+213+ Artificial

+220+

02230 synthetic, EPiNE7.37

04000 84

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala  
1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
20 25 30

Phe Met Tyr Gly Gly Cys Gln Gly Lys Gly Asn Asn Phe Lys Ser Ala  
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
50 55

02100 85

02110 58

02120 PET

02130 Artificial

02200

02230 synthetic, EPiNE7.38

04000 85

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala  
1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
20 25 30

Phe Tyr Tyr Gly Gly Cys Trp Ala Lys Gly Asn Asn Phe Lys Ser Ala  
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
50 55

02100 86

02110 58

02120 PET

02130 Artificial

02200

02230 synthetic, EPiNE7.39

04000 86

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala  
1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
20 25 30

Phe Met Tyr Gly Gly Cys Trp Gly Asp Gly Asn Asn Phe Lys Ser Ala  
           35                          40                          45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
       50                          55

<210> 87  
 <211> 58  
 <212> PRT  
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<220>  
 <223> synthetic, EPiNE7.40

<240> 87

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala  
       1                  5                          10                          15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
           20                          25                          30

Phe Thr Tyr Gly Gly Cys His Gly Asn Gly Asn Asn Phe Lys Ser Ala  
           35                          40                          45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
       50                          55

<210> 87  
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 <223> synthetic, sequence for Table 131

<228>  
 <229> misc\_feature  
 <230> (1)..(6)  
 <233> Xaa can be any naturally occurring amino acid

<240> 68

Xaa Xaa Xaa Xaa Xaa Xaa  
       1                          5

<210> 68  
 <211> 24  
 <212> DNA  
 <213> Artificial

<220>  
 <223> synthetic, DNA for Class I microprotein library

<229>

<211> misc\_feature  
 <212> (1)..(2)  
 <213> n is a, c, g, or t

<210>  
 <211> misc\_feature  
 <212> (7)..(8)  
 <213> n is a, c, g, or t

<210>  
 <211> misc\_feature  
 <212> (10)..(11)  
 <213> n is a, c, g, or t

<210>  
 <211> misc\_feature  
 <212> (13)..(14)  
 <213> n is a, c, g, or t

<210>  
 <211> misc\_feature  
 <212> (16)..(17)  
 <213> n is a, c, g, or t

<210>  
 <211> misc\_feature  
 <212> (22)..(23)  
 <213> n is a, c, g, or t

<440> 83  
 ttttgttrtn ngnnngnntg tnnt

24

<210> 90  
 <211> 13  
 <212> DNA  
 <213> Artificial

<210>  
 <211> synthetic, ds DNA target, upper strand

<400> 90  
 tcttgaatc cgc

13

<210> 91  
 <211> 13  
 <212> DNA  
 <213> Artificial

<210>  
 <211> synthetic, ds DNA target, lower strand

<400> 91  
 tcttgaattta cgg

13

<210> 92  
 <211> 16  
 <212> DNA  
 <213> Artificial

<210>  
 <211> synthetic, ss DNA target, no hairpin

+400+ 92  
cctaacctcg tcatta 16

+210+ 93  
+211+ 1+  
+212+ DNA  
+213+ Artificial

+220+  
+223+ synthetic, ss DNA target with hairpin

+400+ 93  
ccttaggtac ctacgg 16

+210+ 94  
+211+ 1+  
+212+ DNA  
+213+ Artificial

+220+  
+223+ synthetic, ds DNA target, upper strand

+400+ 94  
caaggtatc acggt 15

+210+ 95  
+211+ 1+  
+212+ DNA  
+213+ Artificial

+220+  
+223+ synthetic, ds DNA target, lower strand

+400+ 95  
acggtaatag cc 12

+210+ 96  
+211+ 1+  
+212+ DNA  
+213+ Artificial

+220+  
+223+ synthetic, fragment of M13 gene VIII protein

+230+  
+231+ WDS  
+232+ (9)..(20)

+400+ 96  
atg atg aaa aag tct 20  
Met Lys Lys Ser  
1

+210+ 97  
+211+ 4  
+212+ PBT  
+213+ Artificial

<220>  
 <223> synthetic, fragment of M13 gene VIII protein  
 <400> 97

Met Lys Lys Ser  
 1

<210> 98  
 <211> 10  
 <212> DNA  
 <213> Artificial

<220>  
 <223> synthetic, mutated N-terminal of M13 gene VIII

<210>  
 <211> CDS  
 <212> (9)..(20)

<400> 94  
 acttcacg ctg aaa aag tct  
 Leu Lys Lys Ser  
 1

20

<210> 94  
 <211> 4  
 <212> P&T  
 <213> Artificial

<220>  
 <223> synthetic, mutated N-terminal of M13 gene VIII

<400> 94  
 Leu Lys Lys Ser  
 1

<210> 100  
 <211> 16  
 <212> DNA  
 <213> Artificial

<220>  
 <223> synthetic, DNA for ID 10, upper strand

<400> 100  
 ctagggagga ggaatcc

16

<210> 101  
 <211> 16  
 <212> DNA  
 <213> Artificial

<220>  
 <223> synthetic, DNA for ID 10, lower strand, see also ID 16

<400> 101

gggatacctcc tccctc

16

<210> 102  
 <211> 33  
 <212> DNA  
 <213> Artificial

<220>  
 <223> synthetic, DNA for ID 17

<400> 102  
 ggtggcgagg gaggaggatc cgcgcgtgaa ggt

33

<210> 103  
 <211> 11  
 <212> DNA  
 <213> Artificial

<220>  
 <223> synthetic, DNA for AAG 6-10 of ID 11

<400> 103  
 ggggatacct cctccctcgc c

21

<210> 104  
 <211> 23  
 <212> DNA  
 <213> Artificial

<220>  
 <223> synthetic, DNA for ID 10, M13.3X7

<400> 104  
 gggaggagg aggatccgcc

20

<210> 105  
 <211> 52  
 <212> DNA  
 <213> Artificial

<220>  
 <223> synthetic, DNA for ID 18, M13.3X11

<400> 105  
 gggaggagg gaggatccgg atcctcctcc ctcggatcct cctccctcgc cc

52

<210> 106  
 <211> 18  
 <212> DNA  
 <213> Artificial

<220>  
 <223> synthetic, DNA for library based on Pease et al. "Hybrid I" and  
 "Hybrid II" (5-10)

<400> 106  
 rvtvytrrsv hgvhgrmg

18

<210> 107  
 <211> 12  
 <212> DNA  
 <213> Artificial

<220>  
 <221> synthetic, DNA for library based on postions 4-7 CMTI-I

<230>  
 <231> misc\_feature  
 <232> (5)..(5)  
 <233> n is a, c, g, or t

<240>  
 <241> misc\_feature  
 <242> (7)..(8)  
 <243> n is a, c, g, or t

<400> 107  
 wylvntnnkv wg 12

<210> 108  
 <211> 27  
 <212> DNA  
 <213> Artificial

<220>  
 <221> synthetic, EpiNE alpha (13-21) DNA

<400> 108  
 ccttgcgttg ctatgttcca acgctat 27

<210> 109  
 <211> 27  
 <212> DNA  
 <213> Artificial

<220>  
 <221> synthetic, EpiNE3 (13-21) DNA

<400> 109  
 ccttgcgttg gttttttctc acgctat 27

<210> 110  
 <211> 27  
 <212> DNA  
 <213> Artificial

<220>  
 <221> synthetic, EpiNE6 (13-21) DNA

<400> 110  
 ccttgcgttg gttttttcca acgctat 27

<210> 111  
 <211> 27  
 <212> DNA  
 <213> Artificial

```

+200+
+200+ synthetic, EpiNE7 (13-21) DNA

+400+ 111
+400+ ccttgcgctg ctatgttccc acgctat 27

+200+
+200+ 112
+200+ 27
+200+ DNA
+200+ Artificial

+200+
+200+ synthetic, EpiNE4 (13-21) DNA

+400+ 112
+400+ ccttgcgctg ctatgttccc acgctat 27

+200+
+200+ 113
+200+ 27
+200+ DNA
+200+ Artificial

+200+
+200+ synthetic, EpiNE3 (13-21) DNA

+400+ 113
+400+ ccttgcgctg ctatgttcaa acgctct 27

+200+
+200+ 114
+200+ 27
+200+ DNA
+200+ Artificial

+200+
+200+ synthetic, EpiNE1 (13-21) DNA

+400+ 114
+400+ ccttgcgctg ctttcttccc acgctat 27

+200+
+200+ 115
+200+ 27
+200+ DNA
+200+ Artificial

+200+
+200+ synthetic, EpiNE5 (13-21) DNA

+400+ 115
+400+ ccttgcgctg ctttcttcca acgctat 27

+200+
+200+ 116
+200+ 27
+200+ DNA
+200+ Artificial

+200+
+200+ synthetic, EpiC2 (13-21) DNA

+400+ 116

```

ctttgcatcg ctttgttcaa acgctat

27

4210 117  
4211 15  
4212 DNA  
4213 Artificial

4214  
4215 synthetic, EpiC 1 and 11 (15-19) DNA

4216 117  
atgggttttt ccaaa

15

4218 118  
4219 15  
4220 DNA  
4221 Artificial

4222  
4223 synthetic, EpiC 7 (15-19) DNA

4224 118  
atgggttttt tcaaa

15

4226 119  
4227 15  
4228 DNA  
4229 Artificial

4230  
4231 synthetic, EpiC8 (15-19) DNA

4232 119  
ctcgtatcca cccca

15

4236 120  
4237 15  
4238 DNA  
4239 Artificial

4240  
4241 synthetic, EpiC10 (15-19) DNA

4242 120  
atgggttttt tccaa

15

4246 121  
4247 15  
4248 DNA  
4249 Artificial

4250  
4251 synthetic, EpiC20 (15-19) DNA

4252 121  
atccttatct cccca

15

4254 122

<211> 72  
 <212> PFT  
 <213> Artificial

<220>  
 <222> synthetic, amino acid seq 1

<400> 112

Met Lys Lys Ser Leu Val Leu Lys Ala Ser Val Ala Val Ala Thr Leu  
 1 5 10 15

Val Pro Met Leu Ser Phe Ala Ala Glu Gly Asp Asp Pro Ala Lys Ala  
 20 25 30

Ala Phe Asn Ser Leu Gln Ala Ser Ala Thr Glu Tyr Ile Gly Tyr Ala  
 35 40 45

Trp Ala Met Val Val Val Ile Val Gly Ala Thr Ile Gly Ile Lys Leu  
 50 55 60

Phe Lys Lys Phe Thr Ser Lys Ala Ser  
 65 70

<210> 133  
 <211> 64  
 <212> DNA  
 <213> Artificial

<220>  
 <222> synthetic, oligo #12

<220>  
 <221> misc\_feature  
 <222> (21)..(22)  
 <223> n is a, c, g, or t

<220>  
 <221> misc\_feature  
 <222> (24)..(25)  
 <223> n is a, c, g, or t

<220>  
 <221> misc\_feature  
 <222> (27)..(28)  
 <223> n is a, c, g, or t

<400> 123  
 gggacgcac ggcgtacctgc nnknknknkg ctgaaggtga tgatccggcc aaagcggccg 60  
 ggcg 64

<210> 124  
 <211> 70  
 <212> DNA  
 <213> Artificial

+122+  
+123+ synthetic, oligo #12a

+124+  
+125+ misc\_feature  
+126+ (21)..(23)  
+127+ n is a, c, g, or t

+128+  
+129+ misc\_feature  
+130+ (24)..(25)  
+131+ n is a, c, g, or t

+132+  
+133+ misc\_feature  
+134+ (27)..(28)  
+135+ n is a, c, g, or t

+136+  
+137+ misc\_feature  
+138+ (30)..(31)  
+139+ n is a, c, g, or t

+140+  
+141+ misc\_feature  
+142+ (33)..(34)  
+143+ n is a, c, g, or t

+144+ 134  
gggagcgcat gcgtaacctgc nnknnknnkn nknnkgetga aggtgatgat ccggccaaag 60  
gggagcgcat 70

+145+ 135  
+146+ 76  
+147+ DNA  
+148+ Artificial

+149+  
+150+ synthetic, oligo #12b

+151+  
+152+ misc\_feature  
+153+ (31)..(32)  
+154+ n is a, c, g, or t

+155+  
+156+ misc\_feature  
+157+ (24)..(25)  
+158+ n is a, c, g, or t

+159+  
+160+ misc\_feature  
+161+ (27)..(28)  
+162+ n is a, c, g, or t

+163+  
+164+ misc\_feature  
+165+ (30)..(31)  
+166+ n is a, c, g, or t

```

+229+
+211+ misc_feature
+222+ (33)..(34)
+223+ n is a, c, g, or t

+230+
+211+ misc_feature
+222+ (36)..(37)
+223+ n is a, c, g, or t

+239+
+211+ misc_feature
+222+ (39)..(40)
+223+ n is a, c, g, or t

+488+ 125
ggagagcgat gcgtaacctgc nnknnknnkn nknnknnknn kgctgaaggt gatgatccgg 60
ccaaagcgga cgcgac 76

+219+ 126
+211+ 21
+212+ DNA
+213+ Artificial

+220+
+223+ synthetic, oligo #13

+490+ 126
gggagggcgg ctttggccgg atc 23

+219+ 127
+211+ 54
+212+ DNA
+213+ Artificial

+220+
+223+ synthetic, oligo #14

+230+
+211+ misc_feature
+222+ (29)..(30)
+223+ n is a, c, g, or t

+239+
+211+ misc_feature
+222+ (32)..(33)
+223+ n is a, c, g, or t

+249+
+211+ misc_feature
+222+ (35)..(36)
+223+ n is a, c, g, or t

+488+ 127
gggagggga cggatgctgt cttttgotnn knnknnkttc tgtctcgagc gccgcgga 58

+219+ 128
+211+ 64
+212+ DNA

```

+013+ Artificial

+000+  
+003+ synthetic, oligo #14a

+000+  
+001+ misc\_feature  
+002+ (29)..(30)  
+003+ n is a, c, g, or t

+000+  
+001+ misc\_feature  
+002+ (32)..(33)  
+003+ n is a, c, g, or t

+000+  
+001+ misc\_feature  
+002+ (35)..(36)  
+003+ n is a, c, g, or t

+000+  
+001+ misc\_feature  
+002+ (38)..(39)  
+003+ n is a, c, g, or t

+000+  
+001+ misc\_feature  
+002+ (41)..(42)  
+003+ n is a, c, g, or t

+000+ 138  
ggggcggtta ccgatgctgt cttttgctnn knnknnknnk nnkttctgtc tcgagcgccc 60  
ggga 64

+010+ 129  
+011+ 70  
+012+ DNA  
+013+ Artificial

+000+  
+003+ synthetic, oligo #14b

+000+  
+001+ misc\_feature  
+002+ (29)..(30)  
+003+ n is a, c, g, or t

+000+  
+001+ misc\_feature  
+002+ (32)..(33)  
+003+ n is a, c, g, or t

+000+  
+001+ misc\_feature  
+002+ (35)..(36)  
+003+ n is a, c, g, or t

+000+  
+001+ misc\_feature  
+002+ (38)..(39)

+113+ n is a, c, g, or t

+110+

+111+ misc\_feature

+112+ (41)..(43)

+113+ n is a, c, g, or t

+110+

+111+ misc\_feature

+112+ (44)..(46)

+113+ n is a, c, g, or t

+110+

+111+ misc\_feature

+112+ (47)..(49)

+113+ n is a, c, g, or t

+400+ 139

ggcgcggtgta ccgatgctgt cttttgctnn knknknknknk nnknknknkt tctgtctcga 60

ggcgcggtgta

70

+110+ 130

+111+ 47

+112+ RNA

+113+ Artificial

+110+

+111+ synthetic, original putative RBS

+400+ 130

gggttcagag gcttactatg aagaaatctc tggttcttaa ggctagc 47

+110+ 131

+111+ 48

+112+ DNA

+113+ Artificial

+110+

+111+ synthetic, new RBS

+400+ 131

gggtctgga ggaaataaaa tgaagaaatc tctggttctt aaggctagc 49

+110+ 132

+111+ 41

+112+ DNA

+113+ Artificial

+110+

+111+ syntheticME16 upper strand

+400+ 131

gattctctag agtcggcttt acactttatg ctccggctc g 41

+110+ 133

+111+ 3'

+112+ RNA

+113+ Artificial

```

+220+
+223+ synthetic, MB16, lower strand

+400+ 133
cgagcgcggaa gcataaagtg taaagccgac tctagag 37

+210+ 134
+211+ 36
+212+ DNA
+213+ Artificial

+220+
+223+ synthetic, MB22 insert, upper strand

+400+ 134
gatactactcc ccataccccct gttgacaatt aatcat 36

+210+ 135
+211+ 34
+212+ DNA
+213+ Artificial

+220+
+223+ synthetic, MB22 insert, lower strand

+400+ 135
cgatgatttaa ttgtcaacag ggggatgggg agtg 34

+210+ 136
+211+ 88
+212+ DNA
+213+ Artificial

+220+
+223+ synthetic, DNA/amino acid for phoA signal peptide

+210+
+211+ CES
+212+ (23)..(38)

+400+ 136
gaattccatg ggagaaaata aa atg aaa caa agc acg atc gca ctc tta ccg 52
                               Met Lys Gln Ser Thr Ile Ala Leu Leu Pro
                               1                               5                               10

tta atg ttt acc cct gtg aca aaa gcc cgt ccg gat 88
Leu Leu Phe Thr Pro Val Thr Lys Ala Arg Pro Asp
                               15                               20

+210+ 137
+211+ 33
+212+ FFT
+213+ Artificial

+220+
+223+ synthetic, DNA/amino acid for phoA signal peptide

+400+ 137

```

Met Lys Gln Ser Thr Ile Ala Leu Leu Pro Leu Leu Phe Thr Pro Val  
 1 5 10 15

Thr Lys Ala Arg Pro Asp  
 20

+117- 133  
 +117- 210  
 +117- DNA  
 +117- Artificial

+120-  
 +120- amp gene promoter and signal sequence; signal peptide

+130-  
 +131- CDS  
 +131- (136)..(210)

+400- 138  
 ggaacgggtg ggaacttttcg gggaaatgtg cgcggaaccc ctatttggtt atttttctaa 60  
 ataatattca atagtatcc gtcgatgaga caataaccct gataaatgct tcaataatat 120  
 tttttaaagg aagagt atg agt att caa cat ttc cgt gtc gcc ctt att ccc 171  
 Met Ser Ile Gln His Phe Arg Val Ala Leu Ile Pro  
 1 5 10  
 ttt ttt gcg gca ttt tgc ctt cct gtt ttt gct cat ccg 210  
 Phe Phe Ala Ala Phe Cys Leu Pro Val Phe Ala His Pro  
 15 20 25

+117- 139  
 +117- 25  
 +117- PPT  
 +117- Artificial

+120-  
 +120- amp gene promoter and signal sequence; signal peptide

+400- 139

Met Ser Ile Gln His Phe Arg Val Ala Leu Ile Pro Phe Phe Ala Ala  
 1 5 10 15

Phe Cys Leu Pro Val Phe Ala His Pro  
 20 25

+117- 140  
 +117- 25  
 +117- DNA  
 +117- Artificial

+120-  
 +120- synthetic, mutagenic oligo-nt

+400- 140  
 gtttcagcgg cgccagaata gaaag 25

<110> 141  
 <111> 15  
 <112> DNA  
 <113> Artificial

<120>  
 <220> synthetic, adaptor for second NarI site, upper strand

<400> 141  
 tatctgtggcgc cccgt

15

<110> 142  
 <111> 19  
 <112> DNA  
 <113> Artificial

<120>  
 <220> synthetic, adaptor for second NarI site, lower strand

<400> 142  
 ccgggacgggccc gccagaata

19

<110> 143  
 <111> 402  
 <112> DNA  
 <113> Artificial

<120>  
 <220> synthetic, DNA for Table 3, encodes ID122

<130>  
 <131> misc\_feature  
 <132> (10)..(12)  
 <133> "nnn" is "tcn" or "agy", n is a, c, g or t

<140>  
 <141> misc\_feature  
 <142> (13)..(15)  
 <143> "nnn" is "ttr" or "ctn", n is a, c, g or t

<150>  
 <151> misc\_feature  
 <152> (18)..(21)  
 <153> n is a, c, g, or t

<160>  
 <161> misc\_feature  
 <162> (27)..(27)  
 <163> n is a, c, g, or t

<170>  
 <171> misc\_feature  
 <172> (28)..(30)  
 <173> "nnn" is "tcn" or "agy", n is a, c, g or t

<180>  
 <181> misc\_feature  
 <182> (33)..(33)  
 <183> n is a, c, g, or t

```

+128+
+131+ misc_feature
+133+ (36)..(36)
+134+ n is a, c, g, or t

+138+
+141+ misc_feature
+143+ (39)..(39)
+144+ n is a, c, g, or t

+149+
+151+ misc_feature
+153+ (42)..(42)
+154+ n is a, c, g, or t

+160+
+161+ misc_feature
+163+ (45)..(45)
+164+ n is a, c, g, or t

+170+
+171+ misc_feature
+173+ (46)..(48)
+174+ "nnn" is "ttr" or "ctn", n is a, c, g or t

+180+
+181+ misc_feature
+183+ (51)..(51)
+184+ n is a, c, g, or t

+190+
+191+ misc_feature
+193+ (54)..(54)
+194+ n is a, c, g, or t

+200+
+201+ misc_feature
+203+ (58)..(60)
+204+ "nnn" is "ttr" or "ctn", n is a, c, g or t

+210+
+211+ misc_feature
+213+ (61)..(63)
+214+ "nnn" is "tcn" or "agy", n is a, c, g or t

+220+
+221+ misc_feature
+223+ (69)..(69)
+224+ n is a, c, g, or t

+230+
+231+ misc_feature
+233+ (70)..(72)
+234+ "nnn" is "cgn" or "agr", n is a, c, g or t

+240+
+241+ misc_feature
+243+ (75)..(75)
+244+ n is a, c, g, or t

+250+
+251+ misc_feature
+253+ (85)..(87)
+254+ "nnn" is "ttr" or "ctn", n is a, c, g or t

```

```

+008+
+009+ misc_feature
+010+ (93)..(93)
+011+ n is a, c, g, or t

+020+
+021+ misc_feature
+022+ (96)..(96)
+023+ n is a, c, g, or t

+030+
+031+ misc_feature
+032+ (102)..(102)
+033+ n is a, c, g, or t

+040+
+041+ misc_feature
+042+ (105)..(105)
+043+ n is a, c, g, or t

+050+
+051+ misc_feature
+052+ (108)..(108)
+053+ n is a, c, g, or t

+060+
+061+ misc_feature
+062+ (117)..(117)
+063+ n is a, c, g, or t

+070+
+071+ misc_feature
+072+ (118)..(120)
+073+ "nnn" is "cgn" or "agr", n is a, c, g or t

+080+
+081+ misc_feature
+082+ (129)..(129)
+083+ n is a, c, g, or t

+090+
+091+ misc_feature
+092+ (144)..(144)
+093+ n is a, c, g, or t

+100+
+101+ misc_feature
+102+ (150)..(150)
+103+ n is a, c, g, or t

+110+
+111+ misc_feature
+112+ (153)..(153)
+113+ n is a, c, g, or t

+120+
+121+ misc_feature
+122+ (154)..(156)
+123+ "nnn" is "ttr" or "ctn", n is a, c, g or t

+130+
+131+ misc_feature
+132+ (165)..(168)

```

```

+113+ n is a, c, g, or t

+114+
+111+ misc_feature
+112+ (171)..(171)
+113+ n is a, c, g, or t

+114+
+111+ misc_feature
+112+ (177)..(177)
+113+ n is a, c, g, or t

+114+
+111+ misc_feature
+112+ (180)..(180)
+113+ n is a, c, g, or t

+114+
+111+ misc_feature
+112+ (184)..(184)
+113+ "nnn" is "cgn" or "agr", n is a, c, g or t

+114+
+111+ misc_feature
+112+ (189)..(189)
+113+ n is a, c, g, or t

+114+
+111+ misc_feature
+112+ (194)..(194)
+113+ "nnn" is "cgn" or "agr", n is a, c, g or t

+114+
+111+ misc_feature
+112+ (208)..(210)
+113+ "nnn" is "tcn" or "agy", n is a, c, g or t

+114+
+111+ misc_feature
+112+ (213)..(213)
+113+ n is a, c, g, or t

+114+
+111+ misc_feature
+112+ (223)..(228)
+113+ n is a, c, g, or t

+114+
+111+ misc_feature
+112+ (231)..(231)
+113+ n is a, c, g, or t

+114+
+111+ misc_feature
+112+ (237)..(237)
+113+ n is a, c, g, or t

+114+
+111+ misc_feature
+112+ (240)..(240)
+113+ n is a, c, g, or t

+114+
+111+ misc_feature

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+222> (242)..(243)
+223> n is a, c, g, or t

+224>
+225> misc_feature
+226> (246)..(246)
+227> n is a, c, g, or t

+228>
+229> misc_feature
+230> (250)..(252)
+231> n is a, c, g, or t

+232>
+233> misc_feature
+234> (261)..(261)
+235> n is a, c, g, or t

+236>
+237> misc_feature
+238> (264)..(264)
+239> n is a, c, g, or t

+240>
+241> misc_feature
+242> (270)..(270)
+243> n is a, c, g, or t

+244>
+245> misc_feature
+246> (275)..(275)
+247> n is a, c, g, or t

+248>
+249> misc_feature
+250> (281)..(282)
+251> "nnn" is "tcn" or "agy", n is a, c, g or t

+252>
+253> misc_feature
+254> (285)..(285)
+255> "nnn" is "ttr" or "ctn", n is a, c, g or t

+256>
+257> misc_feature
+258> (291)..(291)
+259> n is a, c, g, or t

+260>
+261> misc_feature
+262> (292)..(294)
+263> "nnn" is "tcn" or "agy", n is a, c, g or t

+264>
+265> misc_feature
+266> (297)..(297)
+267> n is a, c, g, or t

+268>
+269> misc_feature
+270> (300)..(300)
+271> n is a, c, g, or t

+272>

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+221+ misc_feature
+222+ (312)..(312)
+223+ n is a, c, g, or t

+220+
+221+ misc_feature
+222+ (314)..(314)
+223+ n is a, c, g, or t

+220+
+221+ misc_feature
+222+ (324)..(324)
+223+ n is a, c, g, or t

+220+
+221+ misc_feature
+222+ (330)..(330)
+223+ n is a, c, g, or t

+220+
+221+ misc_feature
+222+ (333)..(333)
+223+ n is a, c, g, or t

+220+
+221+ misc_feature
+222+ (336)..(336)
+223+ n is a, c, g, or t

+220+
+221+ misc_feature
+222+ (342)..(342)
+223+ n is a, c, g, or t

+220+
+221+ misc_feature
+222+ (345)..(345)
+223+ n is a, c, g, or t

+220+
+221+ misc_feature
+222+ (348)..(348)
+223+ n is a, c, g, or t

+220+
+221+ misc_feature
+222+ (351)..(351)
+223+ n is a, c, g, or t

+220+
+221+ misc_feature
+222+ (357)..(357)
+223+ n is a, c, g, or t

+220+
+221+ misc_feature
+222+ (364)..(366)
+223+ "nan" is "ttr" or "ctn", n is a, c, g or t

+220+
+221+ misc_feature
+222+ (361)..(361)
+223+ n is a, c, g, or t

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<220>
<221> misc_feature
<222> (382)..(384)
<223> "nnn" is "ten" or "agy", n is a, c, g or t

<220>
<221> misc_feature
<222> (390)..(390)
<223> n is a, c, g, or t

<220>
<221> misc_feature
<222> (391)..(393)
<223> "nnn" is "ten" or "agy", n is a, c, g or t

<220>
<221> misc_feature
<222> (394)..(396)
<223> "nnn" is "tar" or "tga"

<220>
<221> misc_feature
<222> (397)..(399)
<223> "nnn" is "tar" or "tga"

<220>
<221> misc_feature
<222> (400)..(402)
<223> "nnn" is "tar" or "tga"

<400> 143
atgaaraarn nnnnngtann naargcnnnn gtngcngtng cnaennngt nccnatgnnn 60
nnttygcn nncngaytt ytgynngar cccnctaya cnggncctg yaargcnnnn 120
atthcgct aytttayaa ygcnaargcn ggnnnntgyc araenttygt ntayggnggn 180
tgynngcna arnnnaayaa yttyaarnnn gongargayt gyatgognac ntgyggnggn 240
gongcngang gngaygaycc ngcnaargcn genttyaayn nnnncargo nnnngcnaen 300
gartayathg gntaygcntg ggnatggtn gtngtnathg tnggngcnac nathgggnath 360
sarcnttya araarttyac nnnnaargcn nnnnnnnnnn nn 402

<210> 144
<211> 53
<212> PRT
<213> Bos taurus

<400> 144
Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Lys Ala
1 5 10 15
Arg Ile Ile Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr
20 25 30
Phe Val Tyr Gly Gly Cys Arg Ala Lys Arg Asn Asn Phe Lys Ser Ala
35 40 45

```

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
 10 55

\*110\* 146  
 \*111\* 58  
 \*112\* PPT  
 \*113\* Artificial

\*120\*  
 \*123\* Engineered B-PTI from MARK87

\*400\* 145

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Thr Lys Ala  
 1 5 10 15

Arg Ile Ile Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
 20 25 30

Phe Val Tyr Gly Gly Thr Arg Ala Lys Arg Asn Asn Phe Lys Ser Ala  
 35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
 10 55

\*110\* 146  
 \*111\* 58  
 \*112\* PPT  
 \*113\* Artificial

\*120\*  
 \*123\* Engineered B-PTI from MARK87

\*400\* 146

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Ala Lys Ala  
 1 5 10 15

Arg Ile Ile Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
 20 25 30

Phe Val Tyr Gly Gly Ala Arg Ala Lys Arg Asn Asn Phe Lys Ser Ala  
 35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
 10 55

\*110\* 147  
 \*111\* 67  
 \*112\* FRT  
 \*113\* Ebs taurus

\*400\* 147

Phe Gln Thr Pro Pro Asp Leu Cys Gln Leu Pro Gln Ala Arg Gly Pro  
 1 5 10 15

Cys Lys Ala Ala Leu Leu Arg Tyr Phe Tyr Asn Ser Thr Ser Asn Ala  
 20 25 30

Cys Glu Pro Phe Thr Tyr Gly Gly Cys Gln Gly Asn Asn Asn Asn Phe  
 35 40 45

Glu Thr Thr Glu Met Cys Leu Arg Ile Cys Glu Pro Pro Gln Gln Thr  
 50 55 60

Asp Lys Ser  
 65

02100 148  
 02110 60  
 02120 PRT  
 02130 Bos taurus

04000 148

Thr Glu Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys  
 1 5 10 15

Lys Ala Ala Met Ile Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Phe Cys  
 20 25 30

Glu Thr Phe Val Tyr Gly Gly Cys Arg Ala Lys Ser Asn Asn Phe Lys  
 35 40 45

Ser Ala Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
 50 55 60

02100 149  
 02110 58  
 02120 PRT  
 02130 Artificial

02200  
 02230 Semisynthetic BPTI, TSCH87

04000 149

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala  
 1 5 10 15

Arg Ile Ile Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
 20 25 30

Phe Val Tyr Gly Gly Cys Arg Ala Lys Arg Asn Asn Phe Lys Ser Ala  
 35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
50 55

010 150  
011 58  
012 PBT  
013 Artificial

020  
023 Semisynthetic BPTI, TSCH87

040 150

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Gly Ala  
1 5 10 15

Arg Ile Ile Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
10 25 30

Phe Val Tyr Gly Gly Cys Arg Ala Lys Arg Asn Asn Phe Lys Ser Ala  
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
50 55

010 151  
011 58  
012 PBT  
013 Artificial

020  
023 Semisynthetic BPTI, TSCH87

040 151

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Ala Ala  
1 5 10 15

Arg Ile Ile Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
20 25 30

Phe Val Tyr Gly Gly Cys Arg Ala Lys Arg Asn Asn Phe Lys Ser Ala  
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
50 55

010 152  
011 58  
012 PBT  
013 Artificial

020  
023 Semisynthetic BPTI, TSCH87

&lt;400&gt; 152

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Leu Ala  
 1 5 10 15

Arg Ile Ile Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
 20 25 30

Phe Val Tyr Gly Gly Cys Arg Ala Lys Arg Asn Asn Phe Lys Ser Ala  
 35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
 50 55

&lt;210&gt; 153

&lt;211&gt; 58

&lt;212&gt; PRT

&lt;213&gt; Artificial

&lt;220&gt;

&lt;223&gt; Semisynthetic BPTI, TSCH87

&lt;400&gt; 153

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Ile Ala  
 1 5 10 15

Arg Ile Ile Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
 20 25 30

Phe Val Tyr Gly Gly Cys Arg Ala Lys Arg Asn Asn Phe Lys Ser Ala  
 35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
 50 55

&lt;210&gt; 154

&lt;211&gt; 58

&lt;212&gt; PRT

&lt;213&gt; Artificial

&lt;220&gt;

&lt;223&gt; Engineered BPTI, AUER87

&lt;400&gt; 154

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Lys Ala  
 1 5 10 15

Arg Ile Ile Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
 20 25 30

Phe Val Tyr Gly Gly Cys Arg Ala Lys Arg Asn Asn Phe Lys Ser Ala  
 Page 65

35

40

45

Glu Asp Cys Glu Arg Thr Cys Gly Gly Ala  
50 55

02100 156  
02110 60  
02120 PRT  
02130 Dendroaspis polylepis polylepis

04000 156

Gln Pro Leu Arg Lys Leu Cys Ile Leu His Arg Asn Pro Gly Arg Cys  
1 5 10 15

Tyr Gln Lys Ile Pro Ala Phe Tyr Tyr Asn Gln Lys Lys Lys Gln Cys  
20 25 30

Glu Gly Phe Thr Trp Ser Gly Cys Gly Gly Asn Ser Asn Arg Phe Lys  
35 40 45

Thr Ile Glu Glu Cys Arg Arg Thr Cys Ile Arg Lys  
50 55 60

02100 156  
02110 57  
02120 PRT  
02130 Dendroaspis polylepis polylepis

04000 156

Ala Ala Lys Tyr Cys Lys Leu Pro Leu Arg Ile Gly Pro Cys Lys Arg  
1 5 10 15

Lys Ile Pro Ser Phe Tyr Tyr Lys Trp Lys Ala Lys Gln Cys Leu Pro  
20 25 30

Phe Asp Tyr Ser Gly Cys Gly Gly Asn Ala Asn Arg Phe Lys Thr Ile  
35 40 45

Glu Glu Cys Arg Arg Thr Cys Val Gly  
50 55

02100 157  
02110 57  
02120 PRT  
02130 Hemachatus hemachates

04000 157

Arg Pro Asp Phe Cys Glu Leu Pro Ala Glu Thr Gly Leu Cys Lys Ala  
1 5 10 15

Tyr Ile Arg Ser Phe His Tyr Asn Leu Ala Ala Gln Gln Cys Leu Gln  
 20 25 30

Phe Ile Tyr Gly Gly Cys Gly Gly Asn Ala Asn Arg Phe Lys Thr Ile  
 35 40 45

Asp Glu Cys Arg Arg Thr Cys Val Gly  
 50 55

\*110\* 158  
 \*111\* 57  
 \*112\* PRT  
 \*113\* Naja nivea

\*400\* 158

Arg Pro Arg Phe Cys Glu Leu Pro Ala Glu Thr Gly Leu Cys Lys Ala  
 1 5 10 15

Arg Ile Arg Ser Phe His Tyr Asn Arg Ala Ala Gln Gln Cys Leu Glu  
 20 25 30

Phe Ile Tyr Gly Gly Cys Gly Gly Asn Ala Asn Arg Phe Lys Thr Ile  
 35 40 45

Asp Glu Cys His Arg Thr Cys Val Gly  
 50 55

\*110\* 159  
 \*111\* 60  
 \*112\* PRT  
 \*113\* Vipera russelli

\*400\* 159

His Asp Arg Pro Thr Phe Cys Asn Leu Pro Pro Glu Ser Gly Arg Cys  
 1 5 10 15

Arg Gly His Ile Arg Arg Ile Tyr Tyr Asn Leu Glu Ser Asn Lys Cys  
 20 25 30

Lys Val Phe Phe Tyr Gly Gly Cys Gly Gly Asn Ala Asn Asn Phe Glu  
 35 40 45

Thr Arg Asp Glu Cys Arg Glu Thr Cys Gly Gly Lys  
 50 55 60

\*110\* 161  
 \*111\* 64  
 \*112\* PRT  
 \*113\* Caretta sp.

\*400\* 160

Glx Gly Asp Lys Arg Asp Ile Cys Arg Leu Pro Pro Glu Gln Gly Pro  
 1 5 10 15

Cys Lys Gly Arg Leu Pro Arg Tyr Phe Tyr Asn Pro Ala Ser Arg Met  
 20 25 30

Cys Glu Ser Phe Ile Tyr Gly Gly Cys Lys Gly Asn Lys Asn Asn Phe  
 35 40 45

Lys Thr Lys Ala Glu Cys Val Arg Ala Cys Arg Pro Pro Glu Arg Pro  
 50 55 60

<210> 161  
 <211> 53  
 <212> PRT  
 <213> Helix pomatia

<400> 161

Glx Gly Arg Pro Ser Phe Cys Asn Leu Pro Ala Glu Thr Gly Pro Cys  
 1 5 10 15

Lys Ala Ser Ile Arg Gln Tyr Tyr Tyr Asn Ser Lys Ser Gly Gly Cys  
 20 25 30

Gln Gln Phe Ile Tyr Gly Gly Cys Arg Gly Asn Gln Asn Arg Phe Asp  
 35 40 45

Thr Thr Gln Gln Cys Gln Gly Val Cys Val  
 50 55

<210> 162  
 <211> 57  
 <212> PRT  
 <213> Dendroaspis angusticeps

<400> 162

Ala Ala Lys Tyr Cys Lys Leu Pro Val Arg Tyr Gly Pro Cys Lys Lys  
 1 5 10 15

Lys Phe Pro Ser Phe Tyr Tyr Asn Trp Lys Ala Lys Gln Cys Leu Pro  
 20 25 30

Phe Asn Tyr Ser Gly Cys Gly Gly Asn Ala Asn Arg Phe Lys Thr Ile  
 35 40 45

Glu Glu Cys Arg Arg Thr Cys Val Gly  
 50 55

<210> 163

<211> 59  
 <212> PRT  
 <213> Dendroaspis angusticeps

<400> 163

Glx Pro Arg Arg Lys Leu Cys Ile Leu His Arg Asn Pro Gly Arg Cys  
 1 5 10 15

Tyr Asp Lys Ile Pro Ala Phe Tyr Tyr Asn Gln Lys Lys Lys Gln Cys  
 20 25 30

Glu Arg Phe Asp Trp Ser Gly Cys Gly Gly Asn Ser Asn Arg Phe Lys  
 35 40 45

Thr Ile Glu Glu Cys Arg Arg Thr Cys Ile Gly  
 50 55

<210> 164  
 <211> 57  
 <212> PRT  
 <213> Dendroaspis polylepis polylepis

<400> 164

Arg Pro Tyr Ala Cys Glu Leu Ile Val Ala Ala Gly Pro Cys Met Phe  
 1 5 10 15

Phe Ile Ser Ala Phe Tyr Tyr Ser Lys Gly Ala Asn Lys Cys Tyr Pro  
 20 25 30

Phe Thr Tyr Ser Gly Cys Arg Gly Asn Ala Asn Arg Phe Lys Thr Ile  
 35 40 45

Glu Glu Cys Arg Arg Thr Cys Val Val  
 50 55

<210> 165  
 <211> 59  
 <212> PRT  
 <213> Dendroaspis polylepis polylepis

<400> 165

Leu Gln His Arg Thr Phe Cys Lys Leu Pro Ala Glu Pro Gly Pro Cys  
 1 5 10 15

Lys Ala Ser Ile Pro Ala Phe Tyr Tyr Asn Trp Ala Ala Lys Lys Cys  
 20 25 30

Gln Leu Phe His Tyr Gly Gly Cys Lys Gly Asn Ala Asn Arg Phe Ser  
 35 40 45

Thr Ile Glu Lys Cys Arg His Ala Cys Val Gly  
 50 55

<210> 166  
 <211> 61  
 <212> PRT  
 <213> Vipera ammodytes  
 <400> 166

Glx Asp His Pro Lys Phe Cys Tyr Leu Pro Ala Asp Pro Gly Arg Cys  
 1 5 10 15

Lys Ala His Ile Pro Arg Phe Tyr Tyr Asp Ser Ala Ser Asn Lys Cys  
 20 25 30

Asn Lys Phe Ile Tyr Gly Gly Cys Pro Gly Asn Ala Asn Asn Phe Lys  
 35 40 45

Thr Trp Asp Glu Cys Arg Gln Thr Cys Gly Ala Ser Ala  
 50 55 60

<210> 167  
 <211> 62  
 <212> PRT  
 <213> Vipera ammodytes  
 <400> 167

Arg Asp Arg Pro Lys Phe Cys Tyr Leu Pro Ala Asp Pro Gly Arg Cys  
 1 5 10 15

Leu Ala Tyr Met Pro Arg Phe Tyr Tyr Asn Pro Ala Ser Asn Lys Cys  
 20 25 30

Glu Lys Phe Ile Tyr Gly Gly Cys Arg Gly Asn Ala Asn Asn Phe Lys  
 35 40 45

Thr Trp Asp Glu Cys Arg His Thr Cys Val Ala Ser Gly Ile  
 50 55 60

<210> 168  
 <211> 62  
 <212> PRT  
 <213> Bungarus fasciatus  
 <400> 168

Lys Asn Arg Pro Thr Phe Cys Asn Leu Leu Pro Glu Thr Gly Arg Cys  
 1 5 10 15

Asn Ala Leu Ile Pro Ala Phe Tyr Tyr Asn Ser His Leu His Lys Cys  
 20 25 30

Gln Lys Phe Asn Tyr Gly Gly Cys Gly Gly Asn Ala Asn Asn Phe Lys  
 35 40 45

Thr Ile Asp Glu Cys Gln Arg Thr Cys Ala Ala Lys Tyr Gly  
 50 55 60

<210> 169  
 <211> 59  
 <212> PRT  
 <213> Anemonia sulcata

<400> 169

Ile Asn Gly Asp Cys Glu Leu Pro Lys Val Val Gly Pro Cys Arg Ala  
 1 5 10 15

Arg Phe Pro Arg Tyr Tyr Tyr Asn Ser Ser Ser Lys Arg Cys Glu Lys  
 20 25 30

Phe Ile Tyr Gly Gly Cys Gly Gly Asn Ala Asn Asn Phe His Thr Leu  
 35 40 45

Glu Glu Cys Glu Lys Val Cys Gly Val Arg Ser  
 50 55

<210> 170  
 <211> 56  
 <212> PRT  
 <213> Homo sapiens

<400> 170

Lys Glu Asp Ser Cys Gln Leu Gly Tyr Ser Ala Gly Pro Cys Met Gly  
 1 5 10 15

Met Thr Ser Arg Tyr Phe Tyr Asn Gly Thr Ser Met Ala Cys Glu Thr  
 20 25 30

Phe Gln Tyr Gly Gly Cys Met Gly Asn Gly Asn Asn Phe Val Thr Glu  
 35 40 45

Lys Glu Cys Leu Gln Thr Cys Arg  
 50 55

<210> 171  
 <211> 61  
 <212> PRT  
 <213> Homo sapiens

<400> 171

Thr Val Ala Ala Cys Asn Leu Pro Val Ile Arg Gly Pro Cys Arg Ala  
 1 5 10 15

Phe Ile Gln Leu Trp Ala Phe Asp Ala Val Lys Gly Lys Cys Val Leu  
                   20                  25                  30

Phe Pro Tyr Gly Gly Cys Gln Gly Asn Gly Asn Lys Phe Tyr Ser Glu  
                   35                  40                  45

Lys Glu Cys Arg Glu Tyr Cys Gly Val Pro Gly Asp Glu  
           50                  55                  60

<210> 172  
 <211> 60  
 <212> PRT  
 <213> Bungarus multicinctus

<400> 172

Arg Gln Arg His Arg Asp Cys Asp Lys Pro Pro Asp Lys Gly Asn Cys  
   1                  5                  10                  15

Gly Pro Val Arg Ala Phe Tyr Tyr Asp Thr Arg Leu Lys Thr Cys Lys  
                   20                  25                  30

Ala Phe Gln Tyr Arg Gly Cys Asp Gly Asp His Gly Asn Phe Lys Thr  
           35                  40                  45

Glu Thr Leu Cys Arg Cys Glu Cys Leu Val Tyr Pro  
           50                  55                  60

<210> 173  
 <211> 60  
 <212> PRT  
 <213> Bungarus multicinctus

<400> 173

Arg Lys Arg His Pro Asp Cys Asp Lys Pro Pro Asp Thr Lys Ile Cys  
   1                  5                  10                  15

Gln Thr Val Arg Ala Phe Tyr Tyr Lys Pro Ser Ala Lys Arg Cys Val  
                   20                  25                  30

Gln Phe Arg Tyr Gly Gly Cys Asp Gly Asp His Gly Asn Phe Lys Ser  
           35                  40                  45

Asp His Leu Cys Arg Cys Glu Cys Glu Leu Tyr Arg  
           50                  55                  60

<210> 174  
 <211> 53  
 <212> PRT  
 <213> Bos taurus

&lt;400&gt; 174

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Lys Ala  
 1 5 10 15

Lys Met Ile Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Phe Cys Glu Thr  
 20 25 30

Phe Val Tyr Gly Gly Cys Lys Ala Lys Ser Asn Asn Phe Arg Ser Ala  
 35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
 50 55

&lt;210&gt; 175

&lt;211&gt; 61

&lt;212&gt; PRT

&lt;213&gt; Tachypleus tridentatus

&lt;400&gt; 175

Thr Glu Arg Gly Phe Leu Asp Cys Thr Ser Pro Pro Val Thr Gly Pro  
 1 5 10 15

Cys Arg Ala Gly Phe Lys Arg Tyr Asn Tyr Asn Thr Arg Thr Lys Gln  
 20 25 30

Cys Glu Pro Phe Lys Tyr Gly Gly Cys Lys Gly Asn Gly Asn Arg Tyr  
 35 40 45

Lys Ser Glu Gln Asp Cys Leu Asp Ala Cys Ser Gly Phe  
 50 55 60

&lt;210&gt; 176

&lt;211&gt; 63

&lt;212&gt; PRT

&lt;213&gt; Bombyx mori

&lt;400&gt; 176

Asp Glu Pro Thr Thr Asp Leu Pro Ile Cys Glu Gln Ala Phe Gly Asp  
 1 5 10 15

Ala Gly Leu Cys Phe Gly Tyr Met Lys Leu Tyr Ser Tyr Asn Gln Glu  
 20 25 30

Thr Lys Asn Cys Glu Glu Phe Ile Tyr Gly Gly Cys Gln Gly Asn Asp  
 35 40 45

Asn Arg Phe Ser Thr Leu Ala Glu Cys Glu Gln Lys Cys Ile Asn  
 50 55 60

<210> 177  
 <211> 56  
 <212> PRT  
 <213> Bos taurus

<400> 177

Lys Ala Asp Ser Cys Gln Leu Asp Tyr Ser Gln Gly Pro Cys Leu Gly  
 1 5 10 15

Leu Phe Lys Arg Tyr Phe Tyr Asn Gly Thr Ser Met Ala Cys Glu Thr  
 20 25 30

Phe Leu Tyr Gly Gly Cys Met Gly Asn Leu Asn Asn Phe Leu Ser Gln  
 35 40 45

Lys Glu Cys Leu Gln Thr Cys Arg  
 50 55

<210> 178  
 <211> 61  
 <212> PRT  
 <213> Bos taurus

<400> 178

Thr Val Glu Ala Cys Asn Leu Pro Ile Val Gln Gly Pro Cys Arg Ala  
 1 5 10 15

Phe Ile Gln Leu Trp Ala Phe Asp Ala Val Lys Gly Lys Cys Val Arg  
 20 25 30

Phe Ser Tyr Gly Gly Cys Lys Gly Asn Gly Asn Lys Phe Tyr Ser Gln  
 35 40 45

Lys Glu Cys Lys Glu Tyr Cys Gly Ile Pro Gly Glu Ala  
 50 55 60

<210> 179  
 <211> 53  
 <212> PRT  
 <213> Artificial

<220>  
 <223> Engineered BPTI (KR15, ME52)

<400> 179

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Arg Ala  
 1 5 10 15

Arg Ile Ile Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr  
 20 25 30

Phe Val Tyr Gly Gly Cys Arg Ala Lys Arg Asn Asn Phe Lys Ser Ala  
           35                          40                          45

Glu Asp Cys Glu Arg Thr Cys Gly Gly Ala  
           50                          55

<210> 180  
 <211> 59  
 <212> PRT  
 <213> Artificial

<220>  
 <223> Isoaprotinin G-1

<400> 180

Glx Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Lys  
   1                  5                          10                          15

Ala Arg Met Ile Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln  
                   20                          25                          30

Pro Phe Val Tyr Gly Gly Cys Arg Ala Lys Ser Asn Asn Phe Lys Ser  
           35                          40                          45

Ala Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
           50                          55

<210> 181  
 <211> 58  
 <212> PRT  
 <213> Artificial

<220>  
 <223> Isoaprotinin 2

<400> 181

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Lys Ala  
   1                  5                          10                          15

Arg Ile Ile Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Pro  
                   20                          25                          30

Phe Val Tyr Gly Gly Cys Arg Ala Lys Arg Asn Asn Phe Lys Ser Ser  
           35                          40                          45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
           50                          55

<210> 182  
 <211> 58  
 <212> PRT

<213> Artificial

<220>

<223> Isoaprotinin G-2

<400> 182

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Lys Ala  
1 5 10 15

Arg Met Ile Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Pro  
20 25 30

Phe Val Tyr Gly Gly Cys Arg Ala Lys Arg Asn Asn Phe Lys Ser Ala  
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
50 55

<210> 183

<211> 58

<212> PRT

<213> Artificial

<220>

<223> Isoaprotinin 1

<400> 183

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Lys Ala  
1 5 10 15

Lys Met Ile Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Phe Cys Glu Thr  
20 25 30

Phe Val Tyr Gly Gly Cys Lys Ala Lys Ser Asn Asn Phe Arg Ser Ala  
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala  
50 55

<210> 184

<211> 13

<212> DNA

<213> Artificial

<220>

<223> synthetic, SfiI restriction site

<224>

<221> misc\_feature

<222> (5)..(9)

<223> n is a, c, g or t

<400> 184

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<400> 186
cggaccgtat ccaggcttta cactttatgc ttccggctcg tataatgtgt ggaattgtga      60

ggggataaca attcctagga ggcctact atg aag aaa tct ctg gtt ctt aag      112
Met Lys Lys Ser Leu Val Leu Lys
1 5

ggt agc gtt gct gtc gcg acc ctg gta ccg atg ctg tct ttt gct cgt      160
Ala Ser Val Ala Val Ala Thr Leu Val Pro Met Leu Ser Phe Ala Arg
10 15 20

ccg gat ttc tgt ctg gag ccg cca tat act ggg ccc tgc aaa ggc cgc      208
Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Lys Ala Arg
25 30 35 40

atc atc cgt tat ttc tac aac gct aaa gca ggc ctg tgc cag acc ttt      256
Ile Ile Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr Phe
45 50 55

gta tac ggt ggt tgc cgt gct aag cgt aac aac ttt aaa tcg gcc gaa      304

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Ladner7L.ST25.txt

Val	Tyr	Gly	Gly	Cys	Arg	Ala	Lys	Arg	Asn	Asn	Phe	Lys	Ser	Ala	Glu		
			60					65					70				
gat	tgc	atg	cgt	acc	tgc	ggt	ggc	gcc	gct	gaa	ggt	gat	gat	ccg	gcc		352
Asp	Cys	Met	Arg	Thr	Cys	Gly	Gly	Ala	Ala	Glu	Gly	Asp	Asp	Pro	Ala		
		75					80					85					
aaa	gcg	gcc	ttt	aac	tct	ctg	caa	gct	tct	gct	acc	gaa	tat	atc	ggt		400
Lys	Ala	Ala	Phe	Asn	Ser	Leu	Gln	Ala	Ser	Ala	Thr	Glu	Tyr	Ile	Gly		
		90				95					100						
tac	gcg	tgg	gcc	atg	gtg	gtg	ggt	atc	ggt	ggt	gct	acc	atc	ggt	atc		448
Tyr	Ala	Trp	Ala	Met	Val	Val	Val	Ile	Val	Gly	Ala	Thr	Ile	Gly	Ile		
105					110					115					120		
aaa	ctg	ttt	aag	aaa	ttt	act	tcg	aaa	gcg	tct	taatagtgag	ggtaccagtc					501
Lys	Leu	Phe	Lys	Lys	Phe	Thr	Ser	Lys	Ala	Ser							
			125					130									
taagcccgcc	taatgagcgg	gctttttttt	tcctgagg														539

<210> 187  
 <211> 131  
 <212> PRT  
 <213> Artificial

<220>  
 <223> DNA/Protein of Table 25

<400> 137

Met	Lys	Lys	Ser	Leu	Val	Leu	Lys	Ala	Ser	Val	Ala	Val	Ala	Thr	Leu		
1				5					10					15			
Val	Pro	Met	Leu	Ser	Phe	Ala	Arg	Pro	Asp	Phe	Cys	Leu	Glu	Pro	Pro		
			20					25					30				
Tyr	Thr	Gly	Pro	Cys	Lys	Ala	Arg	Ile	Ile	Arg	Tyr	Phe	Tyr	Asn	Ala		
		35					40					45					
Lys	Ala	Gly	Leu	Cys	Gln	Thr	Phe	Val	Tyr	Gly	Gly	Cys	Arg	Ala	Lys		
		50				55					60						
Arg	Asn	Asn	Phe	Lys	Ser	Ala	Glu	Asp	Cys	Met	Arg	Thr	Cys	Gly	Gly		
65					70				75					80			
Ala	Ala	Glu	Gly	Asp	Asp	Pro	Ala	Lys	Ala	Ala	Phe	Asn	Ser	Leu	Gln		
			85					90						95			
Ala	Ser	Ala	Thr	Glu	Tyr	Ile	Gly	Tyr	Ala	Trp	Ala	Met	Val	Val	Val		
			100					105					110				
Ile	Val	Gly	Ala	Thr	Ile	Gly	Ile	Lys	Leu	Phe	Lys	Lys	Phe	Thr	Ser		
		115					120					125					

Lys Ala Ser  
130

<210> 188  
<211> 176  
<212> DNA  
<213> Artificial

<220>  
<223> synthetic, Table 26 DNA\_seq1

<400> 188  
ccgtccgtcg gaccgtatcc aggcctttaca ctttatgctt ccggctcgta taatgtgtgg 60  
aattgtgagc ggataacaat tcctagggcc gtccttcga aagcgtctta atagtgaggt 120  
taccagtcta agcccgcta atgagcgggc tttttttttc ctgaggcagg tgagcg 176

<210> 189  
<211> 176  
<212> DNA  
<213> Artificial

<220>  
<223> synthetic, Table 27 DNA\_synth1, upper strand

<400> 189  
ccgtccgtcg gaccgtatcc aggcctttaca ctttatgctt ccggctcgta taatgtgtgg 60  
aattgtgagc ggataacaat tcctagggcc gtccttcga aagcgtctta atagtgaggt 120  
taccagtcta agcccgcta atgagcgggc tttttttttc ctgaggcagg tgagcg 176

<210> 190  
<211> 100  
<212> DNA  
<213> Artificial

<220>  
<223> synthetic, Table 27 DNA\_synth1, lower strand; oligo #4

<400> 190  
cgctcacctg cctcaggaaa aaaaaagccc gtcattagc cgggcttaga ctggtaacct 60  
gactattaag acgctttcga aggagcggcc ctaggaattg 100

<210> 191  
<211> 171  
<212> DNA  
<213> Artificial

<220>  
<223> synthetic, Table 28 DNA\_Seq 2/Protein

<220>  
<221> CDS  
<222> (15)..(162)

<400> 191

## Ladner7L.ST25.txt

gcaccaacgc ctaggaggct cact atg aag aaa tct ctg gtt ctt aag gct 51  
 Met Lys Lys Ser Leu Val Leu Lys Ala  
 1 5

agc gtt gct gtc gcg acc ctg gta ccg atg ctg tct ttt gct cgt ccg 99  
 Ser Val Ala Val Ala Thr Leu Val Pro Met Leu Ser Phe Ala Arg Pro  
 10 15 20 25

gat ttc tgt ctc gag ccg cca tat act ggg ccc tgc aaa gcg cgc atc 147  
 Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Lys Ala Arg Ile  
 30 35 40

atc cgt act tgc aaa gcggtgcg 171  
 Ile Arg Thr Ser Lys  
 45

<210> 192  
 <211> 46  
 <212> PRT  
 <213> Artificial

<220>  
 <223> synthetic, Table 28 DNA\_Seq 2/Protein

<400> 192

Met Lys Lys Ser Leu Val Leu Lys Ala Ser Val Ala Val Ala Thr Leu  
 1 5 10 15

Val Pro Met Leu Ser Phe Ala Arg Pro Asp Phe Cys Leu Glu Pro Pro  
 20 25 30

Tyr Thr Gly Pro Cys Lys Ala Arg Ile Ile Arg Thr Ser Lys  
 35 40 45

<210> 193  
 <211> 171  
 <212> DNA  
 <213> Artificial

<220>  
 <223> synthetic, Table 29 DNA\_Synth2, upper strand

<400> 193  
 gcaccaacgc ctaggaggct cactatgaag aaatctctgg ttcttaaggc tagcggtgct 60

gtcgcgacc ttgtaaccgat gctgtctttt gctcgctccg atttctgtct cgagccgcca 120

tatactgggc cctgcaaagc gcgcattcatc cgtacttcga aagcggctgc g 171

<210> 194  
 <211> 96  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Oligo #6, hybridizes to DNA\_synth.2 in Table 29

<400> 194

cgcagccgct ttccaagtaa ggatgatgag cgctttgcag ggcccagtat atggcggctc 60  
 gagacagaaa tcggacgag caaaagacag catcgg 96

<210> 195  
 <211> 165  
 <212> DNA  
 <213> Artificial

<220>  
 <223> synthetic, Table 30, DNA\_seq3/protein

<220>  
 <221> CDS  
 <222> (10)..(156)

<400> 195  
 cccatgcaca cgc cgc atc atc cgt tat ttc tac aac gct aaa gca ggc ctg 51  
           Ala Arg Ile Ile Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu  
           1                  5                  10  
 tgc cag acc ttt gta tac ggt ggt tgc cgt gct aag cgt aac aac ttt 99  
 Cys Gln Thr Phe Val Tyr Gly Gly Cys Arg Ala Lys Arg Asn Asn Phe  
 15                  20                  25                  30  
 aaa tgc gcc gaa gat tgc atg cgt acc tgc ggt ggc gcc gct gaa ttt 147  
 Lys Ser Ala Glu Asp Cys Met Arg Thr Cys Gly Gly Ala Ala Glu Phe  
                   35                  40                  45  
 act tgc aaa gcgtgcgcg 165  
 Thr Ser Lys

<210> 196  
 <211> 49  
 <212> PRT  
 <213> Artificial

<220>  
 <223> synthetic, Table 30, DNA\_seq3/protein

<400> 196  
 Ala Arg Ile Ile Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln  
 1                  5                  10                  15  
 Thr Phe Val Tyr Gly Gly Cys Arg Ala Lys Arg Asn Asn Phe Lys Ser  
           20                  25                  30  
 Ala Glu Asp Cys Met Arg Thr Cys Gly Gly Ala Ala Glu Phe Thr Ser  
           35                  40                  45  
 Lys

<210> 197  
 <211> 165

<212> DNA  
 <213> Artificial

<220>  
 <223> synthetic, Table 31 upper strand, DNA\_synth3

<400> 197  
 cccgcacag cgcgcacat cgcgttatctt tacaacgcta aagcaggcct gtgccagacc 60  
 tttgtatacg gtggttgccg tgctaagcgt aacaacttta aatcggccga agattgcatg 120  
 cgtacctgcg gtggcgccgc tgaatttact tcgaaagcgt cgccg 165

<210> 198  
 <211> 97  
 <212> DNA  
 <213> Artificial

<220>  
 <223> synthetic, Table 31 lower strand DNA\_synth3

<400> 198  
 cggcgacgct ttogaagtaa attctgcggc gccaccgcag gtacgcatgc aatcttcggc 60  
 cgtatttaaag ttgttaagct tagcacggca accacgg 97

<210> 199  
 <211> 168  
 <212> DNA  
 <213> Artificial

<220>  
 <223> synthetic, Table 32 DNA\_Seq4/Protein

<220>  
 <221> CDS  
 <222> (10)..(159)

<400> 199  
 cctcgccct ggc gcc gct gaa ggt gat gat ccg gcc aaa gcg gcc ttt aac 51  
           Gly Ala Ala Glu Gly Asp Asp Pro Ala Lys Ala Ala Phe Asn  
           1                  5                  10  
 tct ctg caa gct tct gct acc gaa tat atc ggt tac gcg tgg gcc atg 99  
 Ser Leu Gln Ala Ser Ala Thr Glu Tyr Ile Gly Tyr Ala Trp Ala Met  
 15                  20                  25                  30  
 gtg gtg gtt atc gtt ggt gct acc atc ggt atc aaa ctg ttt aag aaa 147  
 Val Val Val Ile Val Gly Ala Thr Ile Gly Ile Lys Leu Phe Lys Lys  
           35                  40                  45  
 ttt act tog aaa ggcgcgggc 168  
 Phe Thr Ser Lys  
           50

<210> 200  
 <211> 50  
 <212> PRT  
 <213> Artificial

&lt;220&gt;

&lt;223&gt; synthetic, Table 32 DNA\_Seq4/Protein

&lt;400&gt; 200

Gly Ala Ala Glu Gly Asp Asp Pro Ala Lys Ala Ala Phe Asn Ser Leu  
 1 5 10 15

Gln Ala Ser Ala Thr Glu Tyr Ile Gly Tyr Ala Trp Ala Met Val Val  
 20 25 30

Val Ile Val Gly Ala Thr Ile Gly Ile Lys Leu Phe Lys Lys Phe Thr  
 35 40 45

Ser Lys  
 50

&lt;210&gt; 201

&lt;211&gt; 168

&lt;212&gt; DNA

&lt;213&gt; Artificial

&lt;220&gt;

&lt;223&gt; synthetic, Table 33 upper strand DNA\_synth4

&lt;400&gt; 201

gctcgccctg ggcgcgctga aggtgatgat ccggccaaag cggcctttaa ctctctgcaa 60

gcttctgcta ccgaatatat cggttacgcg tgggccatgg tggtggttat cgttggtgct 120

accatcggtg tcaaaactgt taagaaattt acttcgaaag cgtcttga 168

&lt;210&gt; 202

&lt;211&gt; 93

&lt;212&gt; DNA

&lt;213&gt; Artificial

&lt;220&gt;

&lt;223&gt; synthetic, Table 33 lower strand DNA\_synth4

&lt;400&gt; 202

tcaagacgct ttogaagtaa atttcttaaa cagtttgata ccgatggtag caccaacgat 60

aaccaccacc atggcccaag cgtaaccgat ata 93

&lt;210&gt; 203

&lt;211&gt; 41

&lt;212&gt; PRT

&lt;213&gt; Artificial

&lt;220&gt;

&lt;223&gt; synthetic, Table 34 protein library BPT - set # 2.1

&lt;230&gt;

&lt;231&gt; misc\_feature

&lt;232&gt; (6)..(6)

&lt;233&gt; Xaa can be any naturally occurring amino acid

<220>  
 <221> misc\_feature  
 <222> (8)..(8)  
 <223> Xaa can be any naturally occurring amino acid

<220>  
 <221> misc\_feature  
 <222> (16)..(16)  
 <223> Xaa can be any naturally occurring amino acid

<220>  
 <221> misc\_feature  
 <222> (18)..(18)  
 <223> Xaa can be any naturally occurring amino acid

<220>  
 <221> misc\_feature  
 <222> (23)..(23)  
 <223> Xaa can be any naturally occurring amino acid

<220>  
 <221> misc\_feature  
 <222> (37)..(37)  
 <223> Xaa can be any naturally occurring amino acid

<400> 203

Gly	Pro	Cys	Lys	Ala	Xaa	Ile	Xaa	Arg	Tyr	Phe	Tyr	Asn	Ala	Lys	Xaa
1				5				10						15	

Gly	Xaa	Cys	Gln	Thr	Phe	Xaa	Tyr	Gly	Gly	Cys	Arg	Ala	Lys	Arg	Asn
			20					25					30		

Asn	Phe	Lys	Ser	Xaa	Glu	Asp	Cys	Met
		35					40	

<210> 204  
 <211> 130  
 <212> DNA  
 <213> Artificial

<220>  
 <223> synthetic, Table 34 upper strand vg DNA

<220>  
 <221> misc\_feature  
 <222> (22)..(23)  
 <223> n is a, c, g, or t

<220>  
 <221> misc\_feature  
 <222> (28)..(29)  
 <223> n is a, c, g, or t

<220>  
 <221> misc\_feature  
 <222> (52)..(53)  
 <223> n is a, c, g, or t

<220>  
 <221> misc\_feature  
 <222> (58)..(59)  
 <223> n is a, c, g, or t

<220>  
 <221> misc\_feature  
 <222> (73)..(74)  
 <223> n is a, c, g, or t

<220>  
 <221> misc\_feature  
 <222> (115)..(116)  
 <223> n is a, c, g, or t

<400> 204  
 caccctgggc cctgcaaagc gnnkacnnk cgttatttct acaacgctaa annkggtnnk 60  
 tgcacagacct tcnnktaagg tggttgccgt gctaagcgta acaactttaa atctnnkgag 120  
 gattgcatgc 130

<210> 205  
 <211> 78  
 <212> DNA  
 <213> Artificial

<220>  
 <223> synthetic, Table 34 lower stand vg DNA

<220>  
 <221> misc\_feature  
 <222> (13)..(14)  
 <223> n is a, c, g, or t

<220>  
 <221> misc\_feature  
 <222> (55)..(56)  
 <223> n is a, c, g, or t

<400> 205  
 acgggtctgga agnmatgcc accaacggca cgattcgcat tgttgaaatt tagcnnmctc 60  
 ctaacgtaag caccacac 78

<210> 206  
 <211> 53  
 <212> PRT  
 <213> Artificial

<220>  
 <223> synthetic, Table 35 protein set #2 of BP112.1

<400> 206

Leu Glu Pro Pro Tyr Thr Gly Pro Cys Lys Ala Asp Ile Gln Arg Tyr  
 1 5 10 15

Phe Tyr Asn Ala Lys Glu Gly Leu Cys Gln Thr Phe Ser Tyr Gly Gly  
 20 25 30

Cys Arg Ala Lys Arg Asn Asn Phe Lys Ser Trp Glu Asp Cys Met Arg  
 35 40 45

Thr Cys Gly Gly Ala  
 50

<210> 207  
 <211> 156  
 <212> DNA  
 <213> Artificial

<220>  
 <223> synthetic, Table 35 DNA, set #2 of BPII2.1

<400> 207  
 ctccgagccgc catatactgg gccctgcaaa gcggatatcc agcgttattt ctacaacgct 60  
 gagggcctgt gccagacctt ttcgtacggg ggttgccgtg ctaagcgtaa caactttaaa 120  
 tccgtgggaag attgcatgcg tacctgcggg ggcgcc 156

<210> 208  
 <211> 41  
 <212> PRT  
 <213> Artificial

<220>  
 <223> synthetic, Table 39 protein library set #2 BPII2.2

<220>  
 <221> misc\_feature  
 <222> (4)..(4)  
 <223> Xaa can be any naturally occurring amino acid

<220>  
 <221> misc\_feature  
 <222> (7)..(7)  
 <223> Xaa can be any naturally occurring amino acid

<220>  
 <221> misc\_feature  
 <222> (9)..(10)  
 <223> Xaa can be any naturally occurring amino acid

<220>  
 <221> misc\_feature  
 <222> (17)..(17)  
 <223> Xaa can be any naturally occurring amino acid

<220>  
 <221> misc\_feature  
 <222> (20)..(21)  
 <223> Xaa can be any naturally occurring amino acid

<220>  
 <221> misc\_feature  
 <222> (38)..(38)  
 <223> Xaa can be any naturally occurring amino acid

&lt;400&gt; 208

Gly Pro Cys Xaa Ala Asp Xaa Gln Xaa Xaa Phe Tyr Asn Ala Lys Glu  
 1 5 10 15

Xaa Leu Cys Xaa Xaa Phe Ser Tyr Gly Gly Cys Arg Ala Lys Arg Asn  
 20 25 30

Asn Phe Lys Ser Trp Xaa Asp Cys Met  
 35 40

&lt;210&gt; 209

&lt;211&gt; 132

&lt;212&gt; DNA

&lt;213&gt; Artificial

&lt;220&gt;

&lt;223&gt; synthetic, Table 39 upper strand vg DNA

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (57)..(58)

&lt;223&gt; n is a, c, g, or t

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (66)..(67)

&lt;223&gt; n is a, c, g, or t

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (69)..(70)

&lt;223&gt; n is a, c, g, or t

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (120)..(121)

&lt;223&gt; n is a, c, g, or t

&lt;400&gt; 209

gggcacggcg gccctgcmra ggggatrwaac agrvktwttt ctacaacgct aaagagnnkc 60

tgtgcnnknn kttttcgtag ggtgggttgcc gtgctaagcg taacaacttt aaatcgtggn 120

nkgattgcat gc 132

&lt;210&gt; 210

&lt;211&gt; 61

&lt;212&gt; DNA

&lt;213&gt; Artificial

&lt;220&gt;

&lt;223&gt; synthetic, Table 39 lower strand vg DNA

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (41)..(42)

<223> n is a, c, g, or t

<400> 210  
 gccaccaacg gcacgattcg cattgttgaa atttagcacc nnmctaacgt acgcgacctg 60  
 c 61

<210> 211  
 <211> 53  
 <212> PRT  
 <213> Artificial

<220>  
 <223> synthetic, Table 40 protein library set #2 BPII2.2  
 <400> 211

Leu Glu Pro Pro Tyr Thr Gly Pro Cys Glu Ala Asp Val Gln Asn Phe  
 1 5 10 15

Phe Tyr Asn Ala Lys Glu Phe Leu Cys Ser Ala Phe Ser Tyr Gly Gly  
 20 25 30

Cys Arg Ala Lys Arg Asn Asn Phe Lys Ser Trp Gln Asp Cys Met Arg  
 35 40 45

Thr Cys Gly Gly Ala  
 50

<210> 212  
 <211> 159  
 <212> DNA  
 <213> Artificial

<220>  
 <223> synthetic, Table 40 DNA set #2 BPII2.2

<400> 212  
 ctogagcgc catatactgg gccctgcgag gcggatgttc agaatttttt ctacaacgct 60  
 aaagagtttc tgtgctctgc tttttcgtac ggtggttgcc gtgctaagcg taacaacttt 120  
 aaatcgtggc aggattgcat gcgtacctgc ggtggcgcc 159

<210> 213  
 <211> 36  
 <212> PRT  
 <213> Artificial

<220>  
 <223> synthetic, Table 41 protein library set #2 of BPII2.3

<220>  
 <221> misc\_feature  
 <222> (4)..(4)  
 <223> Xaa can be any naturally occurring amino acid

<220>  
 <221> misc\_feature  
 <222> (6)..(6)  
 <223> Xaa can be any naturally occurring amino acid

<220>  
 <221> misc\_feature  
 <222> (12)..(12)  
 <223> Xaa can be any naturally occurring amino acid

<220>  
 <221> misc\_feature  
 <222> (16)..(16)  
 <223> Xaa can be any naturally occurring amino acid

<220>  
 <221> misc\_feature  
 <222> (22)..(22)  
 <223> Xaa can be any naturally occurring amino acid

<220>  
 <221> misc\_feature  
 <222> (24)..(24)  
 <223> Xaa can be any naturally occurring amino acid

<220>  
 <221> misc\_feature  
 <222> (27)..(27)  
 <223> Xaa can be any naturally occurring amino acid

<220>  
 <221> misc\_feature  
 <222> (29)..(29)  
 <223> Xaa can be any naturally occurring amino acid

<400> 213

Leu Glu Pro Xaa Tyr Xaa Gly Pro Cys Glu Ala Xaa Val Gln Asn Xaa  
 1 5 10 15

Phe Tyr Asn Ala Lys Xaa Phe Xaa Cys Ser Xaa Phe Xaa Tyr Gly Gly  
 20 25 30

Cys Arg Ala Lys  
 35

<210> 214  
 <211> 117  
 <212> DNA  
 <213> Artificial

<220>  
 <223> synthetic, Table 41 upper strand vg DNA

<220>  
 <221> misc\_feature  
 <222> (42)..(43)  
 <223> n is a, c, g, or t

<220>

<221> misc\_feature  
 <222> (78)..(78)  
 <223> n is a, c, g, or t

<220>  
 <221> misc\_feature  
 <222> (87)..(88)  
 <223> n is a, c, g, or t

<220>  
 <221> misc\_feature  
 <222> (93)..(94)  
 <223> n is a, c, g, or t

<400> 214  
 cgagcctgct cgagccgvmg tatvmggggc cctgcgaggc gnnkgttcag aattdkttct 60  
 acaacgccaa gvagttntnk tgcctnnkt ttnnktacgg tggttgccgt gctaagc 117

<210> 215  
 <211> 67  
 <212> DNA  
 <213> Artificial

<220>  
 <223> synthetic, Table 41 lower strand vg DNA

<220>  
 <221> misc\_feature  
 <222> (20)..(20)  
 <223> n is a, c, g, or t

<220>  
 <221> misc\_feature  
 <222> (29)..(30)  
 <223> n is a, c, g, or t

<220>  
 <221> misc\_feature  
 <222> (35)..(36)  
 <223> n is a, c, g, or t

<400> 215  
 gatgttgagg ttcbtcaaan amacgagann maaannmatg ccaccaacgg cacgattcgc 60  
 gacgggc 67

<210> 216  
 <211> 53  
 <212> PRT  
 <213> Artificial

<220>  
 <223> synthetic, Table 42 protein from set #2 BP112.3

<400> 216

Leu Glu Pro Glu Tyr Gln Gly Pro Cys Glu Ala Ala Val Gln Asn Trp  
 1 5 10 15

Gln Phe Met Cys Ser Leu Phe His Tyr Gly Gly Phe Tyr Asn Ala Lys  
 20 25 30

Cys Arg Ala Lys Arg Asn Asn Phe Lys Ser Trp Gln Asp Cys Met Arg  
 35 40 45

Thr Cys Gly Gly Ala  
 50

<210> 217  
 <211> 159  
 <212> DNA  
 <213> Artificial

<220>  
 <223> synthetic, Table 42, DNA from set #2 of BPII 2.3

<400> 217  
 ctccgagccgg agtatcaggg gccctgogag gcggtgttc agaattgggt ctacaacgct 60  
 aaacagtta tgtgtctctt ttttcattac ggtgggtgcc gtgctaagcg taacaacttt 120  
 aaatcgtggc aggattgcat ggtacctgc ggtggcgcc 159

<210> 218  
 <211> 533  
 <212> DNA  
 <213> Artificial

<220>  
 <223> synthetic, pbd mod14, Table 101a

<400> 218  
 gaattcgagc tcggtaccgc gggatcctct agagtcgggt ttacacttta tgcttcgggc 60  
 togtataatg tgtggaattg tgagcgctca caattgagct caggaggctt actatgaaga 120  
 aatctctgggt tcttaaggct agcgttgctg tcgcgacct ggtacctatg ttgtccttcg 180  
 ctccgacgga tttctgtctc gagccaccat aactggggc ctgcaaagcg cgcacatcc 240  
 gotatttcta caatgctaaa gcaggcctgt gccagacott tgtatacggg ggttgccgtg 300  
 ctaagcgtaa caactttaaa tcggccgaag attgcatgog tacctgcggg ggccgcgctg 360  
 aaggtgatga tcgggccaaag ggggccttca attctctgca agcttctgct accgagtata 420  
 ttggttacgc gtgggccatg ggggtgggta tcgttggtgc taccatcggg atcaaaactgt 480  
 tcaagaagtt tacttcgaag gcgtttaaat gatagggtta ccagtctaag ccgcgctaata 540  
 gagcggggtt tttttttatc gagacctgca ggcattgcaag ctt 583

<210> 219  
 <211> 584  
 <212> DNA  
 <213> Artificial

<220>

&lt;223&gt; synthetic, Table 101b

&lt;400&gt; 219

```

gaattcgagc tcggtaccgc gggatcctct agagtcggct ttacacttta tgcttcgggc      60
tcgtataatg tgtggaattg tgagcgctca caattgagct cagaggctta ctatgaagaa      120
atctctggtt ctttaaggcta gcgttgctgt cgcgaacctg gtacctatgt tgtccttcgc      180
tcgtccggat ttctgtctcg agccaccata cactgggccc tgcaaagcgc gcatcatccg      240
ctatttctac aatgctaaag caggcctgtg ccagaccttt gtatacgggtg gttgccgtgc      300
taagcgtaac aactttaaat cggccgaaga ttgcatgcgt acctgcgggtg gcgcgcgtga      360
aggtgatgat ccggccaagg cggccttcaa ttctctgcaa gcttctgcta ccgagtatat      420
tggttacgcg tgggccatgg tggtggttat cgttgggtgt accatcggga tcaaactgtt      480
caagaagttt acttccaagg cgtcttaaat atagggttac cagtctaagc ccgcctaattg      540
agcgggcttt ttttttatcg agacctgcag gtcgacgggc atgc                        584

```

&lt;210&gt; 220

&lt;211&gt; 132

&lt;212&gt; PRT

&lt;213&gt; Artificial

&lt;220&gt;

&lt;223&gt; synthetic, Table 102a protein

&lt;400&gt; 220

```

Phe Met Lys Lys Ser Leu Val Leu Lys Ala Ser Val Ala Val Ala Thr
1          5          10          15

```

```

Leu Val Pro Met Leu Ser Phe Ala Arg Pro Asp Phe Cys Leu Glu Pro
          20          25          30

```

```

Pro Tyr Thr Gly Pro Cys Lys Ala Arg Ile Ile Arg Tyr Phe Tyr Asn
35          40          45

```

```

Ala Lys Ala Gly Leu Cys Gln Thr Phe Val Tyr Gly Gly Cys Arg Ala
50          55          60

```

```

Lys Arg Asn Asn Phe Lys Ser Ala Glu Asp Cys Met Arg Thr Cys Gly
65          70          75          80

```

```

Gly Ala Ala Glu Gly Asp Asp Pro Ala Lys Ala Ala Phe Asn Ser Leu
85          90          95

```

```

Gln Ala Ser Ala Thr Glu Tyr Ile Gly Tyr Ala Trp Ala Met Val Val
100         105         110

```

```

Val Ile Val Gly Ala Thr Ile Gly Ile Lys Leu Phe Lys Lys Phe Thr
115         120         125

```

Ser Lys Ala Ser  
130

<210> 221  
<211> 556  
<212> DNA  
<213> Artificial

<220>  
<223> synthetic, Table 102a DNA

<400> 221  
ggatcctcta gagtcggctt tacactttat gcttcgggt cgtataatgt gtggaattgt 60  
gagcgctcac aattgagctc aggaggctta ctatgaagaa atctctgggt ctttaaggcta 120  
gagttgctgt cggcgacctg gtacctatgt tgtccttcgc tcgtccggat ttctgtctcg 180  
agccaccata cactggggccc tgcaaagcgc gcacatccg ctatttctac aatgctaaag 240  
caggcctgtg ccagaccttt gtatacggtg gttgccgtgc taagcgtaac aactttaaat 300  
cggccgaaga ttgcatgcgt acctgcggtg gcgccgtga aggtgatgat ccggccaagg 360  
cggccttcaa ttctctgcaa gcttctgcta ccgagtatat tggttacgcg tggggcatgg 420  
tggtggttat cgttggtgct accatcggga tcaaactgtt caagaagttt acttcgaagg 480  
cgtcttaatg atagggttac cagtctaagc ccgcctaatg agcgggcttt ttttttatcg 540  
agacctgcag gcatgc 556

<210> 222  
<211> 132  
<212> PRT  
<213> Artificial

<220>  
<223> synthetic, Table 102b protein

<400> 222  
Phe Met Lys Lys Ser Leu Val Leu Lys Ala Ser Val Ala Val Ala Thr  
1 5 10 15  
Leu Val Pro Met Leu Ser Phe Ala Arg Pro Asp Phe Cys Leu Glu Pro  
20 25 30  
Pro Tyr Thr Gly Pro Cys Lys Ala Arg Ile Ile Arg Tyr Phe Tyr Asn  
35 40 45  
Ala Lys Ala Gly Leu Cys Gln Thr Phe Val Tyr Gly Gly Cys Arg Ala  
50 55 60  
Lys Arg Asn Asn Phe Lys Ser Ala Glu Asp Cys Met Arg Thr Cys Gly  
65 70 75 80

Gly Ala Ala Glu Gly Asp Asp Pro Ala Lys Ala Ala Phe Asn Ser Leu  
                   85                                  90                                  95

Gln Ala Ser Ala Thr Glu Tyr Ile Gly Tyr Ala Trp Ala Met Val Val  
                   100                                  105                                  110

Val Ile Val Gly Ala Thr Ile Gly Ile Lys Leu Phe Lys Lys Phe Thr  
                   115                                  120                                  125

Ser Lys Ala Ser  
                   130

<210> 223  
 <211> 563  
 <212> DNA  
 <213> Artificial

<220>  
 <223> synthetic, Table 102b DNA

<400> 223  
 ggatcctcta gagtcgggtt tacactttat gcttcgggt cgtataatgt gtggaattgt 60  
 gagcgctcac aattgagctc agaggcttac tatgaagaaa tctctgggtc ttaaggctag 120  
 cgttgctgtc ggcacctgg tacctatgtt gtccttcgct cgtccggatt tctgtctcga 180  
 ggcaccatac actggggcctt gcaaaagcgc catcatccgc tatttctaca atgctaaagc 240  
 aggcctgtgc cagacctttg tatacgggtg ttgccgtgct aagcgtaaca actttaaatc 300  
 ggcgaagat tgcctggcta cctgcgggtg cgccgctgaa ggtgatgac cggccaaggc 360  
 ggccttcaat tctctgcaag cttctgctac cgagtatatt ggttacgcgt gggccatggt 420  
 ggtggttata gttggtgcta ccacgggat caaactgttc aagaagtta cttcgaaggc 480  
 gtcttaatga tagggttacc agtctaagcc cgcctaata gggggctttt tttttatcga 540  
 gacctgcagg tcgacggga tgc 563

<210> 224  
 <211> 132  
 <212> PRT  
 <213> Artificial

<220>  
 <223> synthetic, Table 103 protein

<400> 224

Phe Met Lys Lys Ser Leu Val Leu Lys Ala Ser Val Ala Val Ala Thr  
 1                  5                                  10                                  15

Leu Val Pro Met Leu Ser Phe Ala Arg Pro Asp Phe Cys Leu Glu Pro  
                   20                                  25                                  30

Pro Tyr Thr Gly Pro Cys Lys Ala Arg Ile Ile Arg Tyr Phe Tyr Asn  
 35 40 45

Ala Lys Ala Gly Leu Cys Gln Thr Phe Val Tyr Gly Gly Cys Arg Ala  
 50 55 60

Lys Arg Asn Asn Phe Lys Ser Ala Glu Asp Cys Met Arg Thr Cys Gly  
 65 70 75 80

Gly Ala Ala Glu Gly Asp Asp Pro Ala Lys Ala Ala Phe Asn Ser Leu  
 85 90 95

Gln Ala Ser Ala Thr Glu Tyr Ile Gly Tyr Ala Trp Ala Met Val Val  
 100 105 110

Val Ile Val Gly Ala Thr Ile Gly Ile Lys Leu Phe Lys Lys Phe Thr  
 115 120 125

Ser Lys Ala Ser  
 130

<210> 225  
 <211> 526  
 <212> DNA  
 <213> Artificial

<220>  
 <223> synthetic, Table 103 DNA

<400> 225  
 ggctttacac tttatgcttc cggctcgtat aatgtgtgga attgtgagcg ctcacaattg 60  
 agctcaggag gcttactatg aagaaatctc tggttcttaa ggctagcggt gctgtcgcga 120  
 ccttggtacc tatgttgtec ttcgctcgte cggattttctg tctcgagcca ccatacactg 180  
 ggccttgcaa agcgcgcata atccgctatt tctacaatgc taaagcaggc ctgtgccaga 240  
 ccttggtata cggtggttgc cgtgctaagc gtaacaactt taaatcggcc gaagattgca 300  
 tgcgtacatg cggtgggccc gctgaagggt atgatccggc caaggcggcc ttcaattctc 360  
 tgcgaagctc tgctacggag tatattggtt acgcgtgggc catggtggtg gttatcgttg 420  
 gtgctaaccat cgggatcaaa ctgttcaaga agtttaacttc gaaggcgtct taatgatagg 480  
 gttaccagtc taagcccgcc taatgagcgg gctttttttt tatoga 526

<410> 226  
 <411> 68  
 <412> DNA  
 <413> Artificial

<420>

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<223> oligo #801 Table 104-105

<400> 226
ggcttttacac tttatgcttc cggctcgat aatgtgtgga attgtgagcg ctcacaattg 60
agctcagg 68

<210> 227
<211> 67
<212> DNA
<213> Artificial

<220>
<223> oligo #802 Table 104-105

<400> 227
aggcttacta tgaagaaatc tctggttctt aaggctagcg ttgctgtcgc gaccctggta 60
cctatgt 67

<210> 228
<211> 70
<212> DNA
<213> Artificial

<220>
<223> oligo #803 Table 104-105

<400> 228
tgtccttcgc tcgtccggat ttctgtctcg agccaccata cactgggccc tgcaaagcgc 60
gcacatcccg 70

<210> 229
<211> 67
<212> DNA
<213> Artificial

<220>
<223> oligo #804 Table 104-105

<400> 229
ctatttctac aatgctaaag caggcctgtg ccagaccttt gtatacgggtg gttgccgtgc 60
taagcgt 67

<210> 230
<211> 76
<212> DNA
<213> Artificial

<220>
<223> oligo #805 Table 104-105

<400> 230
aacaacttta aatcggcga agattgcatg cgtacctgag gtggcgccgc tgaaggtgat 60
gatccggcca aggcgg 76

```

<210> 231  
 <211> 67  
 <212> DNA  
 <213> Artificial

<220>  
 <223> oligo #806 Table 104-105

<400> 231  
 ccttcaattc tctgcaagct tctgctaccg agtatattgg ttacgcgtgg gccatggtgg 60  
 tggttat 67

<210> 232  
 <211> 69  
 <212> DNA  
 <213> Artificial

<220>  
 <223> oligo #807 Table 104-105

<400> 232  
 cgttggtgct accatcgga tcaaaactggt caagaagttt acttcgaagg cgtcttaatg 60  
 atagggtta 69

<210> 233  
 <211> 38  
 <212> DNA  
 <213> Artificial

<220>  
 <223> oligo #808 Table 104-105

<400> 233  
 ccagttataag ccgcgctaata gagcgggctt ttttttta 38

<210> 234  
 <211> 29  
 <212> DNA  
 <213> Artificial

<220>  
 <223> oligo #810 Table 104-105

<400> 234  
 tggataaaaa aaaagccgc tcattaggc 29

<210> 235  
 <211> 69  
 <212> DNA  
 <213> Artificial

<220>  
 <223> oligo #811 Table 104-105

<400> 235  
 ggggttagac tggtaacct atcattaaga cgccttcgaa gtaaaacttc tgaacagttt 60  
 gatcccgat 69

<210> 236  
 <211> 65  
 <212> DNA  
 <213> Artificial

<220>  
 <223> oligo #812 Table 104-105

<400> 236  
 ggtagcacca acgataacca ccaccatggc ccacgcgtaa ccaatatact cggtagcaga 60  
 agctt 65

<210> 237  
 <211> 76  
 <212> DNA  
 <213> Artificial

<220>  
 <223> oligo #813 Table 104-105

<400> 237  
 gcagagaatt gaaggccgcc ttggccggat catcaccttc agcggcgcca ccgcaggtac 60  
 goatgcaatc ttoggc 76

<210> 238  
 <211> 67  
 <212> DNA  
 <213> Artificial

<220>  
 <223> oligo #814 Table 104-105

<400> 238  
 cgatttaaag ttgttaacgt tagcaaggca accacogtat acaaaggtct ggcacaggcc 60  
 tgcttta 67

<210> 239  
 <211> 72  
 <212> DNA  
 <213> Artificial

<220>  
 <223> oligo #815 Table 104-105

<400> 239  
 gcattgtaga aatagcggat gatgcgcgct ttgcagggcc cagtgtatgg tggctcgaga 60  
 cagaaatccg ga 72

<210> 240  
 <211> 65  
 <212> DNA  
 <213> Artificial

<220>

<223> oligo #816 Table 104-105

<400> 240  
cgagcgaagg acaacatagg taccagggtc gcgacagcaa cgctagcctt aagaaccaga 60  
gattt 65

<210> 241  
<211> 68  
<212> DNA  
<213> Artificial

<220>  
<223> oligo #817 Table 104-105

<400> 241  
cttcatagta agcctcctga gctcaattgt gagcgctcac aattccacac attatacgag 60  
ccggaagg 68

<210> 242  
<211> 15  
<212> DNA  
<213> Artificial

<220>  
<223> synthetic 802:812 junction

<400> 242  
aggcttacta tgaag 15

<210> 243  
<211> 13  
<212> DNA  
<213> Artificial

<220>  
<223> synthetic 803:816 junction

<400> 243  
tgtccttcgc tcg 13

<210> 244  
<211> 15  
<212> DNA  
<213> Artificial

<220>  
<223> synthetic 804:815 junction

<400> 244  
ctatttctac aatgc 15

<210> 245  
<211> 15  
<212> DNA  
<213> Artificial

<220>

<223> synthetic 805:814 junction

<400> 245

aacaacttta aatcg

15

<210> 246

<211> 15

<212> DNA

<213> Artificial

<220>

<223> synthetic 806:813 junction

<400> 246

ccttcaattc tctgc

15

<210> 247

<211> 13

<212> DNA

<213> Artificial

<220>

<223> synthetic 807:812 junction

<400> 247

cgttggtgct acc

13

<210> 248

<211> 13

<212> DNA

<213> Artificial

<220>

<223> synthetic 808:811 junction

<400> 248

ccagttctaag ccc

13

<210> 249

<211> 23

<212> PRT

<213> Artificial

<220>

<223> PhoA signal

<400> 249

Met Lys Gln Ser Thr Ile Ala Leu Ala Leu Leu Pro Leu Leu Phe Thr

1

5

10

15

Pro Val Thr Lys Ala Arg Thr

20

<210> 250

<211> 27

<212> PRT

<213> Artificial

&lt;220&gt;

&lt;223&gt; MalE signal

&lt;400&gt; 250

Met	Lys	Ile	Lys	Thr	Gly	Ala	Arg	Ile	Leu	Ala	Leu	Ser	Ala	Leu	Thr
1				5					10					15	

Thr	Met	Met	Phe	Ser	Ala	Ser	Ala	Leu	Ala	Lys
			20					25		

&lt;210&gt; 251

&lt;211&gt; 24

&lt;212&gt; PRT

&lt;213&gt; Artificial

&lt;220&gt;

&lt;223&gt; OmpF signal

&lt;400&gt; 251

Met	Met	Lys	Arg	Asn	Ile	Leu	Ala	Val	Ile	Val	Pro	Ala	Leu	Leu	Val
1				5					10					15	

Ala	Gly	Thr	Ala	Asn	Ala	Ala	Glu
			20				

&lt;210&gt; 252

&lt;211&gt; 25

&lt;212&gt; PRT

&lt;213&gt; Artificial

&lt;220&gt;

&lt;223&gt; Bla signal

&lt;400&gt; 252

Met	Ser	Ile	Gln	His	Phe	Arg	Val	Ala	Leu	Ile	Pro	Phe	Phe	Ala	Ala
1				5					10					15	

Phe	Cys	Leu	Pro	Val	Phe	Ala	His	Pro
			20					25

&lt;210&gt; 253

&lt;211&gt; 27

&lt;212&gt; PRT

&lt;213&gt; Artificial

&lt;220&gt;

&lt;223&gt; lamB signal

&lt;400&gt; 253

Met	Met	Ile	Thr	Leu	Arg	Lys	Leu	Pro	Leu	Ala	Val	Ala	Val	Ala	Ala
1				5					10					15	

Gly Val Met Ser Ala Gln Ala Met Ala Val Asp  
 20 25

<210> 254  
 <211> 22  
 <212> PRT  
 <213> Artificial

<220>  
 <223> Lpp signal

<400> 254

Met Lys Ala Thr Lys Leu Val Leu Gly Ala Val Ile Leu Gly Ser Thr  
 1 5 10 15

Leu Leu Ala Gly Cys Ser  
 20

<210> 255  
 <211> 23  
 <212> PRT  
 <213> Artificial

<220>  
 <223> gpIII signal

<400> 255

Met Lys Lys Leu Leu Phe Ala Ile Pro Leu Val Val Pro Phe Tyr Ser  
 1 5 10 15

His Ser Ala Glu Thr Val Glu  
 20

<210> 256  
 <211> 21  
 <212> PRT  
 <213> Artificial

<220>  
 <223> gpIII-BPTI signal

<400> 256

Met Lys Lys Leu Leu Phe Ala Ile Pro Leu Val Val Pro Phe Tyr Ser  
 1 5 10 15

Gly Ala Arg Pro Asp  
 20

<210> 257  
 <211> 18  
 <212> PRT  
 <213> Artificial

<220>

<223> gpVIII signal

<400> 257

Met Lys Lys Ser Leu Val Leu Lys Ala Ser Val Ala Val Ala Thr Leu  
1 5 10 15

Val Pro Met Leu Ser Phe Ala Ala Glu Gly Asp Asp  
20 25

<210> 258

<211> 26

<212> PRT

<213> Artificial

<220>

<223> gpVIII-BPTI signal

<400> 258

Met Lys Lys Ser Leu Val Leu Lys Ala Ser Val Ala Val Ala Thr Leu  
1 5 10 15

Val Pro Met Leu Ser Phe Ala Arg Pro Asp  
20 25

<210> 259

<211> 28

<212> PRT

<213> Artificial

<220>

<223> gpVIII' signal

<400> 259

Met Lys Lys Ser Leu Val Leu Leu Ala Ser Val Ala Val Ala Thr Leu  
1 5 10 15

Val Pro Met Leu Ser Phe Ala Ala Glu Gly Asp Asp  
20 25

<210> 260

<211> 1302

<212> DNA

<213> Artificial

<220>

<223> Table 109 MB gene III

<400> 260

gtgaaaaaat tattattcgc aattccttta gttgttcott tctattctca ctccgctgaa 60

actgttgaaa gttgttttagc aaaaccccat acagaaaatt catttactaa cgtctggaaa 120

gaagacaaaa ctttagatcg ttacgctaac tatgagggtt gtctgtggaa tgctacaggc 180

gttgtagttt gtactggtga cgaaactcag tgttacggta catgggttcc tattgggott 240

```

gctatccctg aaaatgaggg tgggtggctct gaggggtggcg gttctgaggg tggcggttct 300
gaggggtggcg gtactaaacc tctgagtagc ggtgatacac ctattccggg ctatacttat 360
atcaaccctc tegacggcac ttatccgctt ggtactgagc aaaaccccg c taatcctaata 420
ccttctcttg aggagttctc gctctttaat actttcatgt ttcagaataa taggttccga 480
aataggcagg gggcattaac tgtttatacg ggcactgita ctcaaggcac tgaccccggt 540
aaaacttatt accagtagac tctgttatca tcaaaagcca tgtatgacgc ttactggaac 600
ggtaaattca gagactggcg ttccattctt ggttttaatg aggatccatt cgtttgtgaa 660
tatcaaggcc aatcgtctga cctgctcaa cctcctgtca atgctggcgg cggctctggg 720
ggtggttctg gtggcggctc tgaggggtgg ggtctgaggg gtggcggttc tgaggggtggc 780
ggctctgagg gagggcggtc cgggtggtggc tctggttccg gtgattttga ttatgaaaag 840
atggcaaacg ctaataaggg ggtatgacc gaaaatgcg atgaaaacgc gctacagtct 900
gacgctaaag gcaaaactga ttctgtcgtt actgattacg gtgctgctat cgatgggttc 960
attggtgacg ttccgggctt tgcataaggt aatggtgcta ctggtgattt tgctggctct 1020
aattcccaaa tggctcaagt cgggtgacgg gataattcac cttaatagaa taatttccgt 1080
caatatttac ctccctccc tcaatcgggt gaatgtcggc ctttgtctt tagcgtggg 1140
aaaccatag aattttctat tgattgtgac aaaataaact tattccgtgg tgtctttgcg 1200
cttcttttat atgttgccac ctttatgtat gtattttcta cgtttgctaa catactgcgt 1260
aataaggagt cttaatcatg ccagttcttt tgggtattcc gt 1302

```

<210> 261  
 <211> 22  
 <212> PRT  
 <213> Artificial

<220>  
 <223> synthetic cleavage site of wild-type pIII, Table 110(A)  
 <400> 261

```

Met Lys Lys Leu Leu Phe Ala Ile Pro Leu Val Val Pro Phe Tyr Ser
1           5           10          15

```

```

His Ser Ala Glu Thr Val
           20

```

<210> 262  
 <211> 66  
 <212> DNA  
 <213> Artificial

<220>  
 <223> synthetic DNA of Table 110(A)

<400> 262  
 gtgaaaaaat tattattcgc aattccttta gttgttcctt tctattctca ctccgctgaa 60  
 actggt 66

<210> 263  
 <211> 22  
 <212> PRT  
 <213> Artificial

<220>  
 <223> synthetic cleavage site of modified pIII, Table 110(B)

<400> 263

Met Lys Lys Leu Leu Phe Ala Ile Pro Leu Val Val Pro Phe Tyr Ser  
 1 5 10 15

Gly Ala Ala Glu Thr Val  
 20

<210> 264  
 <211> 66  
 <212> DNA  
 <213> Artificial

<220>  
 <223> synthetic DNA of Table 110(B) with NarI site

<400> 264  
 gtgaaaaaat tattattcgc aattccttta gttgttcctt tctattctgg cgccgctgaa 60  
 actggt 66

<210> 265  
 <211> 84  
 <212> PRT  
 <213> Artificial

<220>  
 <223> synthetic protein of Table 111

<400> 265

Met Lys Lys Leu Leu Phe Ala Ile Pro Leu Val Val Pro Phe Tyr Ser  
 1 5 10 15

Gly Ala Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys  
 20 25 30

Lys Ala Arg Ile Ile Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys  
 35 40 45

Gln Thr Phe Val Tyr Gly Gly Cys Arg Ala Lys Arg Asn Asn Phe Lys  
 50 55 60

Ser Ala Glu Asp Cys Met Arg Thr Cys Gly Gly Ala Gly Ala Ala Glu  
 65 70 75 80

Thr Val Glu Ser

<210> 266  
 <211> 1230  
 <212> DNA  
 <213> Artificial

<220>  
 <223> synthetic Table 111, IIIsp::bpti::mautreIII fusion gene

<400> 266  
 tgttttagcaa aaccccatat agaaaattca ttactaactg tctggaaaga cgacaaaact 60  
 ttagatcggt acgctaacta tgagggttgt ctgtggaatg ctacaggcgt ttaggtttgt 120  
 actggtgacg aaactcagtg ttacggtaca tgggttcta ttgggcttgc tatccctgaa 180  
 aatgaggggtg gtggctctga ggggtggcgt tctgaggggt gcggttctga ggggtggcgt 240  
 actaaacctc ctgagtaagg tgatacacct attccgggct atacttatat caacctctc 300  
 gacggcaact atccgcttg taactgagcaa aaccccgcta atcctaatac ttctcttgag 360  
 gagtctcaga ctcttaatac ttctatgttt cagaataata ggttccgaaa taggcagggg 420  
 gcattaaactg ttatacggg caactgtact caaggcactg accccgttaa aacttattac 480  
 cagtacactc ctgtatcact aaaagccatg tatgacgctt actggaacgg taaattcaga 540  
 gactgagctt tccattctgg cttaaatgag gatccattcg ttgtgaata tcaaggccaa 600  
 tegtctgacc tgctcaaac tctgtcaat gctggcggcg gctctggtgg tggttctggt 660  
 ggaggctctg aggggtggtg ctctgagggg ggcggttctg aggggtggcg ctctgagggg 720  
 ggagggtcag gtggtggctc tgggtccggg gattttgatt atgaaaagat ggcaaacgct 780  
 aataaggggg ctatgacga aaatgcgat gaaaacgcgc tacagtctga cgctaaaggc 840  
 aaacttgatt ctgtcgctac tgattacggg gctgctatcg atggtttcat tggtagcgtt 900  
 tccggccttg ctaatggtaa tgggtgctact ggtgattttg ctggctctaa ttcccaaagt 960  
 gctcaagctg gtgacggtga taattcact ttaatgaata atttcgtca atatttacct 1020  
 tccctccctc aatcggttga atgtcgccct ttgtcttta gcgctggtaa accatatgaa 1080  
 tttctatttg attgtgacaa aataaaacta ttccgtgggtg tctttgaggt tcttttatat 1140  
 gttgcacact ttatgtatgt atttctacg ttgtctaaca tactgcgtaa taaggagtct 1200  
 taatcatgcc agttcttttg ggtattccgt 1230

<210> 267  
 <211> 567  
 <212> DNA  
 <213> Artificial

&lt;220&gt;

&lt;223&gt; synthetic protein of Table 112, DNA

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (96)..(488)

&lt;400&gt; 267

ggatccactc cccatccccc tgttgacaat taatcatcgg ctcgataat gtgtggaatt 60

gtgagcgctc acaattgagc tctggaggaa ataaa atg aag aaa tct ctg gtt 113  
 Met Lys Lys Ser Leu Val  
 1 5

ctt aag gct agc gtt gct gtc gcg acc ctg gta cct atg ttg tcc ttc 161  
 Leu Lys Ala Ser Val Ala Val Ala Thr Leu Val Pro Met Leu Ser Phe  
 10 15 20

ggt cgt ccg gat ttc tgt ctg gag cca cca tac act ggg ccc tgc aaa 209  
 Ala Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Lys  
 25 30 35

ggg cgc atc atc cgc tat ttc tac aat gct aaa gca ggc ctg tgc cag 257  
 Ala Arg Ile Ile Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln  
 40 45 50

acc ttt gta tac ggt ggt tgc cgt gct aag cgt aac aac ttt aaa tcg 305  
 Thr Phe Val Tyr Gly Gly Cys Arg Ala Lys Arg Asn Asn Phe Lys Ser  
 55 60 65 70

gcc gaa gat tgc atg cgt acc tgc ggt ggc gcc gct gaa ggt gat gat 353  
 Ala Glu Asp Cys Met Arg Thr Cys Gly Gly Ala Ala Glu Gly Asp Asp  
 75 80 85

ccg gcc aag gcg gcc ttc aat tct ctg caa gct tct gct acc gag tat 401  
 Pro Ala Lys Ala Ala Phe Asn Ser Leu Gln Ala Ser Ala Thr Glu Tyr  
 90 95 100

att ggt tac gcg tgg gcc atg gtg gtg gtt atc gtt ggt gct acc atc 449  
 Ile Gly Tyr Ala Trp Ala Met Val Val Val Ile Val Gly Ala Thr Ile  
 105 110 115

ggg atc aaa ctg ttc aag aag ttt act tcg aag gcg tct taatgatagg 498  
 Gly Ile Lys Leu Phe Lys Lys Phe Thr Ser Lys Ala Ser  
 120 125 130

gttaccagtc taagcccgcc taatgagcgg gctttttttt tatcgagacc tgcaggtcga 558

ccggcatgc 567

&lt;210&gt; 268

&lt;211&gt; 131

&lt;212&gt; PRT

&lt;213&gt; Artificial

&lt;220&gt;

&lt;223&gt; synthetic protein of Table 112, DNA

&lt;400&gt; 268

Met Lys Lys Ser Leu Val Leu Lys Ala Ser Val Ala Val Ala Thr Leu

1

5

10

15

Val Pro Met Leu Ser Phe Ala Arg Pro Asp Phe Cys Leu Glu Pro Pro  
                   20                  25                  30

Tyr Thr Gly Pro Cys Lys Ala Arg Ile Ile Arg Tyr Phe Tyr Asn Ala  
           35                  40                  45

Lys Ala Gly Leu Cys Gln Thr Phe Val Tyr Gly Gly Cys Arg Ala Lys  
       50                  55                  60

Arg Asn Asn Phe Lys Ser Ala Glu Asp Cys Met Arg Thr Cys Gly Gly  
   65                  70                  75                  80

Ala Ala Glu Gly Asp Asp Pro Ala Lys Ala Ala Phe Asn Ser Leu Gln  
                   85                  90                  95

Ala Ser Ala Thr Glu Tyr Ile Gly Tyr Ala Trp Ala Met Val Val Val  
                   100                  105                  110

Ile Val Gly Ala Thr Ile Gly Ile Lys Leu Phe Lys Lys Phe Thr Ser  
       115                  120                  125

Lys Ala Ser  
       130

<210> 269  
 <211> 550  
 <212> DNA  
 <213> Artificial

<220>  
 <223> synthetic Table 113 DNA/Protein

<220>  
 <221> CDS  
 <222> (99)..(479)

<400> 269  
 ggatccactc cccatccccc tgttgacaat taatcatcgg ctctgataat gtgtggaatt 60  
 gtgagcgctc acaattgagc tccatggggag aaaataaaa atg aaa caa agc acg atc 116  
                                   Met Lys Gln Ser Thr Ile  
   1                  5  
 gca ctg tta ccg tta ctg ttt acc cct gtg aca aaa gcc cgt ccg gat 164  
 Ala Leu Leu Pro Leu Leu Phe Thr Pro Val Thr Lys Ala Arg Pro Asp  
                   10                  15                  20  
 ttc tgt ctg gag cca cca tac act ggg ccg tgc aaa gcc cgg atc atc 212  
 Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Lys Ala Arg Ile Ile  
       25                  30                  35  
 cgc tat ttc tac aat gct aaa gca gcc ctg tgc cag acc ttt gta tac 260  
                                   Page 108

## Ladner7L.ST25.txt

```

Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr Phe Val Tyr
 40          45          50
ggt ggt tgc cgt gct aag cgt aac aac ttt aaa tcg gcc gaa gat tgc      308
Gly Gly Cys Arg Ala Lys Arg Asn Asn Phe Lys Ser Ala Glu Asp Cys
55          60          65          70
atg cgt acc tgc ggt ggc gcc gct gaa ggt gat gat ccg gcc aag gcg      356
Met Arg Thr Cys Gly Gly Ala Ala Glu Gly Asp Asp Pro Ala Lys Ala
          75          80          85
gcc ttc aat tct ctg caa gct tct gct acc gag tat att ggt tac gcg      404
Ala Phe Asn Ser Leu Gln Ala Ser Ala Thr Glu Tyr Ile Gly Tyr Ala
          90          95          100
tgg gcc atg gtg gtg gtt atc gtt ggt gct acc atc ggg atc aaa ctg      452
Trp Ala Met Val Val Val Ile Val Gly Ala Thr Ile Gly Ile Lys Leu
          105          110          115
ttc aag aag ttt act tcg aag gcg tct taatgatagg gttaccagtc      499
Phe Lys Lys Phe Thr Ser Lys Ala Ser
          120          125
taagcccgcc taatgagcgg gctttttttt tatcgagacc tgcaggtcga c      550

```

<210> 270  
 <211> 127  
 <212> PRT  
 <213> Artificial

<220>  
 <223> synthetic Table 113 DNA/Protein

<400> 270

```

Met Lys Gln Ser Thr Ile Ala Leu Leu Pro Leu Leu Phe Thr Pro Val
 1          5          10          15
Thr Lys Ala Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro
          20          25          30
Cys Lys Ala Arg Ile Ile Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu
          35          40          45
Cys Gln Thr Phe Val Tyr Gly Gly Cys Arg Ala Lys Arg Asn Asn Phe
          50          55          60
Lys Ser Ala Glu Asp Cys Met Arg Thr Cys Gly Gly Ala Ala Glu Gly
          65          70          75          80
Asp Asp Pro Ala Lys Ala Ala Phe Asn Ser Leu Gln Ala Ser Ala Thr
          85          90          95
Glu Tyr Ile Gly Tyr Ala Trp Ala Met Val Val Val Ile Val Gly Ala
          100          105          110

```

Thr Ile Gly Ile Lys Leu Phe Lys Lys Phe Thr Ser Lys Ala Ser  
 115 120 125

<210> 271  
 <211> 1455  
 <212> DNA  
 <213> Artificial

<220>  
 <223> synthetic Table 116 DNA/Protein

<220>  
 <221> CDS  
 <222> (1)..(1452)

<400> 271  
 atg aaa aaa tta tta ttc gca att cct tta gtt gtt cct ttc tat tct 48  
 Met Lys Lys Leu Leu Phe Ala Ile Pro Leu Val Val Pro Phe Tyr Ser  
 1 5 10 15  
 ggc gcc cgt cgg gat ttc tgt ctc gag cca cca tac act ggg ccc tgc 96  
 Gly Ala Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys  
 20 25 30  
 aaa ggc cgc atc atc cgc tat ttc tac aat gct aaa gca ggc ctg tgc 144  
 Lys Ala Arg Ile Ile Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys  
 35 40 45  
 cag acc ttt gta tac ggt ggt tgc cgt gct aag cgt aac aac ttt aaa 192  
 Gln Thr Phe Val Tyr Gly Cys Arg Ala Lys Arg Asn Asn Phe Lys  
 50 55 60  
 tgg gcc gaa gat tgc atg cgt acc tgc ggt ggc gcc ggc gcc gct gaa 240  
 Ser Ala Glu Asp Cys Met Arg Thr Cys Gly Gly Ala Gly Ala Ala Glu  
 65 70 75 80  
 act gtt gaa agt tgt tta gca aaa ccc cat aca gaa aat tca ttt act 288  
 Thr Val Glu Ser Cys Leu Ala Lys Pro His Thr Glu Asn Ser Phe Thr  
 85 90 95  
 aac gtc tgg aaa gac gac aaa act tta gat cgt tac gct aac tat gag 336  
 Asn Val Trp Lys Asp Asp Lys Thr Leu Asp Arg Tyr Ala Asn Tyr Glu  
 100 105 110  
 ggt tgt ctg tgg aat gct aca ggc gtt gta gtt tgt act ggt gac gaa 384  
 Gly Cys Leu Trp Asn Ala Thr Gly Val Val Val Cys Thr Gly Asp Glu  
 115 120 125  
 act cag tgt tac ggt aca tgg gtt cct att ggg ctt gct atc cct gaa 432  
 Thr Gln Cys Tyr Gly Thr Trp Val Pro Ile Gly Leu Ala Ile Pro Glu  
 130 135 140  
 aat gag ggt ggt ggc tct gag ggt ggc ggt tct gag ggt ggc ggt tct 480  
 Asn Glu Gly Gly Gly Ser Glu Gly Gly Gly Ser Glu Gly Gly Gly Ser  
 145 150 155 160  
 gag ggt ggc ggt act aaa cct cct gag tac ggt gat aca cct att cgg 528  
 Glu Gly Gly Gly Thr Lys Pro Pro Glu Tyr Gly Asp Thr Pro Ile Pro  
 165 170 175  
 ggc tat act tat atc aac cct ctc gac ggc act tat cgg cct ggt act 576  
 Gly Tyr Thr Tyr Ile Asn Pro Leu Asp Gly Thr Tyr Pro Pro Gly Thr

## Ladner7L.ST25.txt

180	185	190	
gag caa aac ccc ggt aat cct aat cct tct ctt gag gag tct cag cct Glu Gln Asn Pro Ala Asn Pro Asn Pro Ser Leu Glu Glu Ser Gln Pro 195 200 205			624
ctt aat act ttc atg ttt cag aat aat agg ttc cga aat agg cag ggg Leu Asn Thr Phe Met Phe Gln Asn Asn Arg Phe Arg Asn Arg Gln Gly 210 215 220			672
gca tta act gtt tat acg ggc act gtt act caa ggc act gac ccc gtt Ala Leu Thr Val Tyr Thr Gly Thr Val Thr Gln Gly Thr Asp Pro Val 225 230 235 240			720
aaa act tat tac cag tac act cct gta tca tca aaa gcc atg tat gac Lys Thr Tyr Tyr Gln Tyr Thr Pro Val Ser Ser Lys Ala Met Tyr Asp 245 250 255			768
ggt tac tgg aac ggt aaa ttc aga gac tgc ggt ttc cat tct ggc ttt Ala Tyr Trp Asn Gly Lys Phe Arg Asp Cys Ala Phe His Ser Gly Phe 260 265 270			816
aat gag gat cca ttc gtt tgt gaa tat caa ggc caa tcg tct gac ctg Asn Glu Asp Pro Phe Val Cys Glu Tyr Gln Gly Gln Ser Ser Asp Leu 275 280 285			864
cct caa cct cct gtc aat ggt ggc ggc ggc tct ggt ggt ggt tct ggt Pro Gln Pro Pro Val Asn Ala Gly Gly Gly Ser Gly Gly Gly Ser Gly 290 295 300			912
ggc ggc tct gag ggt ggt ggc tct gag ggt ggc ggt tct gag ggt ggc Gly Gly Ser Glu Gly Gly Ser Glu Gly Gly Ser Glu Gly Gly Ser Gly 305 310 315 320			960
ggc tct gag gga ggc ggt tcc ggt ggt ggc tct ggt tcc ggt gat ttt Gly Ser Glu Gly Gly Gly Ser Gly Gly Ser Gly Ser Gly Asp Phe 325 330 335			1008
gat tat gaa aag atg gca aac ggt aat aag ggg ggt atg acc gaa aat Asp Tyr Glu Lys Met Ala Asn Ala Asn Lys Gly Ala Met Thr Glu Asn 340 345 350			1056
gac gat gaa aac ggc cta cag tct gac ggt aaa ggc aaa ctt gat tct Ala Asp Glu Asn Ala Leu Gln Ser Asp Ala Lys Gly Lys Leu Asp Ser 355 360 365			1104
gtc ggt act gat tac ggt ggt ggt atc gat ggt ttc att ggt gac gtt Val Ala Thr Asp Tyr Gly Ala Ala Ile Asp Gly Phe Ile Gly Asp Val 370 375 380			1152
tcc ggc ctt ggt aat ggt aat ggt ggt act ggt gat ttt ggt ggc tct Ser Gly Leu Ala Asn Gly Asn Gly Ala Thr Gly Asp Phe Ala Gly Ser 385 390 395 400			1200
aat tcc caa atg ggt caa gtc ggt gac ggt gat aat tca cct cta atg Asn Ser Gln Met Ala Gln Val Gly Asp Gly Asp Asn Ser Pro Leu Met 405 410 415			1248
aat aat ttc cgt caa tat tta cct tcc ctc cct caa tcg gtt gaa tgt Asn Asn Phe Arg Gln Tyr Leu Pro Ser Leu Pro Gln Ser Val Glu Cys 420 425 430			1296
ggc cct ttt gtc ttt agc ggt ggt aaa cca tat gaa ttt tct att gat Arg Pro Phe Val Phe Ser Ala Gly Lys Pro Tyr Glu Phe Ser Ile Asp 435 440 445			1344

435	440	445	
tgt gac aaa ata aac tta ttc cgt ggt gtc ttt gcg ttt ctt tta tat			1392
Cys Asp Lys Ile Asn Leu Phe Arg Gly Val Phe Ala Phe Leu Leu Tyr			
450	455	460	
ggt gcc acc ttt atg tat gta ttt tct acg ttt gct aac ata ctg cgt			1440
Val Ala Thr Phe Met Tyr Val Phe Ser Thr Phe Ala Asn Ile Leu Arg			
465	470	475	480
aat aag gag tct taa			1455
Asn Lys Glu Ser			

<210> 272  
 <211> 484  
 <212> PRT  
 <213> Artificial

<220>  
 <223> synthetic Table 116 DNA/Protein  
 <400> 272

Met Lys Lys Leu Leu Phe Ala Ile Pro Leu Val Val Pro Phe Tyr Ser
1 5 10 15

Gly Ala Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys
20 25 30

Lys Ala Arg Ile Ile Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys
35 40 45

Gln Thr Phe Val Tyr Gly Gly Cys Arg Ala Lys Arg Asn Asn Phe Lys
50 55 60

Ser Ala Glu Asp Cys Met Arg Thr Cys Gly Gly Ala Gly Ala Ala Glu
65 70 75 80

Thr Val Glu Ser Cys Leu Ala Lys Pro His Thr Glu Asn Ser Phe Thr
85 90 95

Asn Val Trp Lys Asp Asp Lys Thr Leu Asp Arg Tyr Ala Asn Tyr Glu
100 105 110

Gly Cys Leu Trp Asn Ala Thr Gly Val Val Val Cys Thr Gly Asp Glu
115 120 125

Thr Gln Cys Tyr Gly Thr Trp Val Pro Ile Gly Leu Ala Ile Pro Glu
130 135 140

Asn Glu Gly Gly Gly Ser Glu Gly Gly Gly Ser Glu Gly Gly Gly Ser
145 150 155 160

Glu Gly Gly Gly Thr Lys Pro Pro Glu Tyr Gly Asp Thr Pro Ile Pro  
 165 170 175  
 Gly Tyr Thr Tyr Ile Asn Pro Leu Asp Gly Thr Tyr Pro Pro Gly Thr  
 180 185 190  
 Glu Gln Asn Pro Ala Asn Pro Asn Pro Ser Leu Glu Glu Ser Gln Pro  
 195 200 205  
 Leu Asn Thr Phe Met Phe Gln Asn Asn Arg Phe Arg Asn Arg Gln Gly  
 210 215 220  
 Ala Leu Thr Val Tyr Thr Gly Thr Val Thr Gln Gly Thr Asp Pro Val  
 225 230 235 240  
 Lys Thr Tyr Tyr Gln Tyr Thr Pro Val Ser Ser Lys Ala Met Tyr Asp  
 245 250 255  
 Ala Tyr Trp Asn Gly Lys Phe Arg Asp Cys Ala Phe His Ser Gly Phe  
 260 265 270  
 Asn Glu Asp Pro Phe Val Cys Glu Tyr Gln Gly Gln Ser Ser Asp Leu  
 275 280 285  
 Pro Gln Pro Pro Val Asn Ala Gly Gly Gly Ser Gly Gly Gly Ser Gly  
 290 295 300  
 Gly Gly Ser Glu Gly Gly Gly Ser Glu Gly Gly Gly Ser Glu Gly Gly  
 305 310 315 320  
 Gly Ser Glu Gly Gly Gly Ser Gly Gly Gly Ser Gly Ser Gly Asp Phe  
 325 330 335  
 Asp Tyr Glu Lys Met Ala Asn Ala Asn Lys Gly Ala Met Thr Glu Asn  
 340 345 350  
 Ala Asp Glu Asn Ala Leu Gln Ser Asp Ala Lys Gly Lys Leu Asp Ser  
 355 360 365  
 Val Ala Thr Asp Tyr Gly Ala Ala Ile Asp Gly Phe Ile Gly Asp Val  
 370 375 380  
 Ser Gly Leu Ala Asn Gly Asn Gly Ala Thr Gly Asp Phe Ala Gly Ser  
 385 390 395 400  
 Asn Ser Gln Met Ala Gln Val Gly Asp Gly Asp Asn Ser Pro Leu Met  
 405 410 415

Asn Asn Phe Arg Gln Tyr Leu Pro Ser Leu Pro Gln Ser Val Glu Cys  
 420 425 430

Arg Pro Phe Val Phe Ser Ala Gly Lys Pro Tyr Glu Phe Ser Ile Asp  
 435 440 445

Cys Asp Lys Ile Asn Leu Phe Arg Gly Val Phe Ala Phe Leu Leu Tyr  
 450 455 460

Val Ala Thr Phe Met Tyr Val Phe Ser Thr Phe Ala Asn Ile Leu Arg  
 465 470 475 480

Asn Lys Glu Ser

<210> 273  
 <211> 131  
 <212> PRT  
 <213> Artificial

<220>  
 <223> synthetic, amino acid Seq 2

<400> 273

Met Lys Lys Ser Leu Val Leu Lys Ala Ser Val Ala Val Ala Thr Leu  
 1 5 10 15

Val Pro Met Leu Ser Phe Ala Arg Pro Asp Phe Cys Leu Glu Pro Pro  
 20 25 30

Tyr Thr Gly Pro Cys Lys Ala Arg Ile Ile Arg Tyr Phe Tyr Asn Ala  
 35 40 45

Lys Ala Gly Leu Cys Gln Thr Phe Val Tyr Gly Gly Cys Arg Ala Lys  
 50 55 60

Arg Asn Asn Phe Lys Ser Ala Glu Asp Cys Met Arg Thr Cys Gly Gly  
 65 70 75 80

Ala Ala Glu Gly Asp Asp Pro Ala Lys Ala Ala Phe Asn Ser Leu Gln  
 85 90 95

Ala Ser Ala Thr Glu Tyr Ile Gly Tyr Ala Trp Ala Met Val Val Val  
 100 105 110

Ile Val Gly Ala Thr Ile Gly Ile Lys Leu Phe Lys Lys Phe Thr Ser  
 115 120 125

Lys Ala Ser

130

<210> 274  
<211> 23  
<212> PRT  
<213> Artificial

<220>

<223> Fig. 15, residues 20-42 of scorpion toxin

<400> 274

Gly	Glu	Asn	Glu	Gly	Cys	Asp	Thr	Glu	Gly	Lys	Ala	Lys	Asn	Gly	Gly
1				5					10					15	

Gly	Ser	Tyr	Gly	Tyr	Cys	Tyr
			20			